

CBRFC Forecast Areas

Great Basin Water Supply Briefing

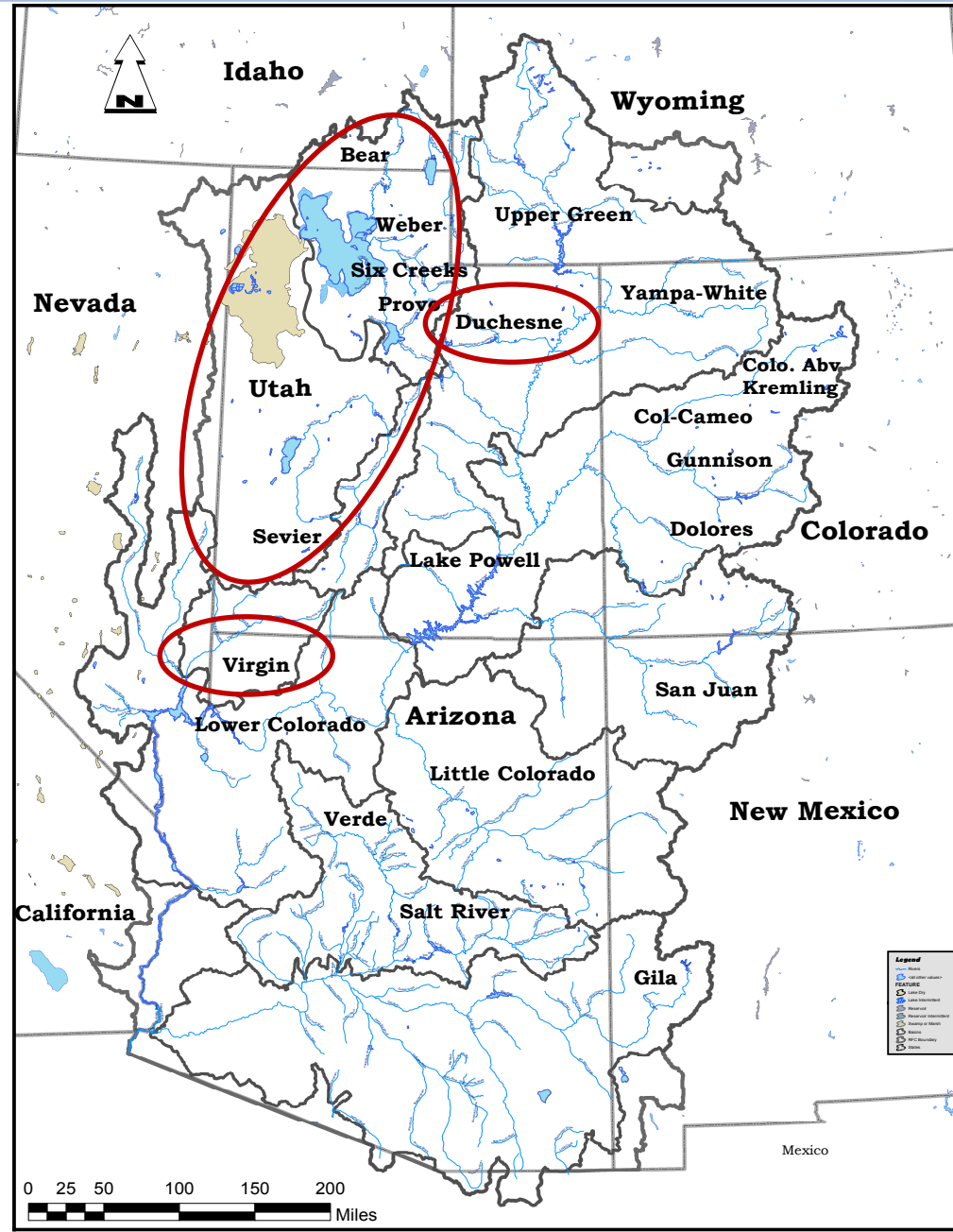
February 7th, 2019

Ashley Nielson- Sr. Hydrologist
Colorado Basin River Forecast Center

Phone: 1-877-929-0660

Passcode: 1706374

Please mute your phone
until ready to ask questions



Today's Presentation

Weather review

Quite a different start from than last year

Current Snowpack

Impacts of dry soils

2019 Water Supply Forecasts

Select Forecast Site Review

February Forecast Error

Upcoming Weather

Contacts & Questions

Phone: 1-877-929-0660 Passcode: 1706374

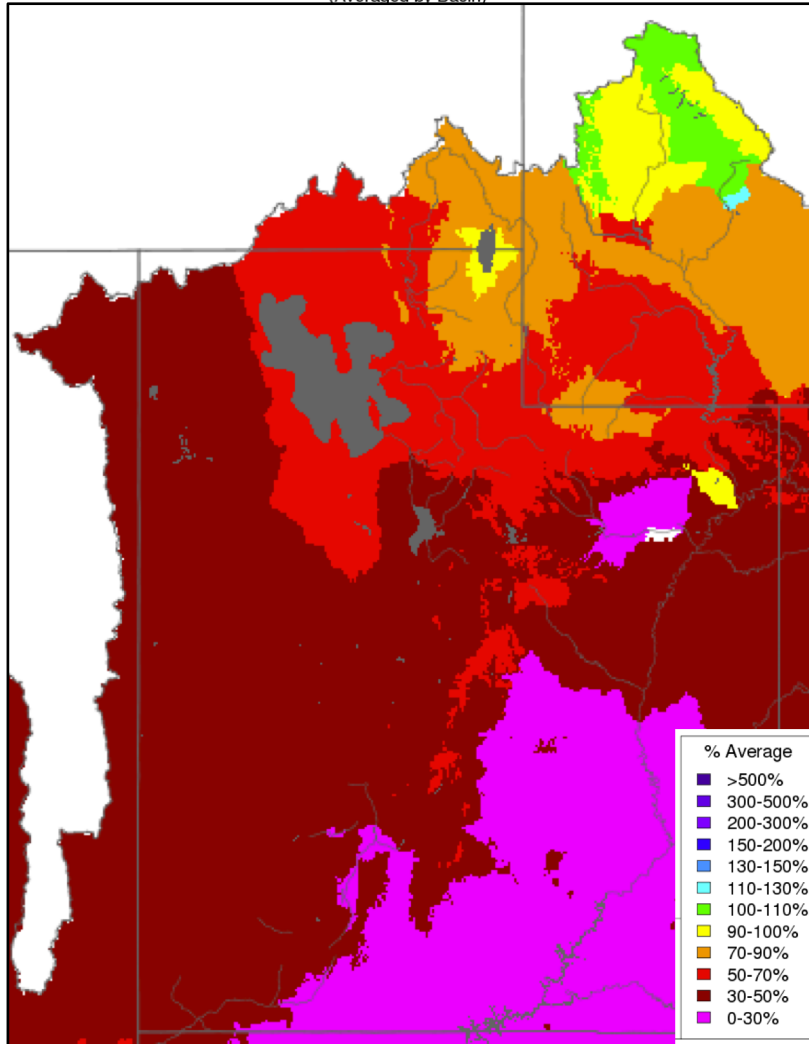
*** Please mute your phone until the question period ***

A much different start compared to last year

Water Year (October – January) Precipitation

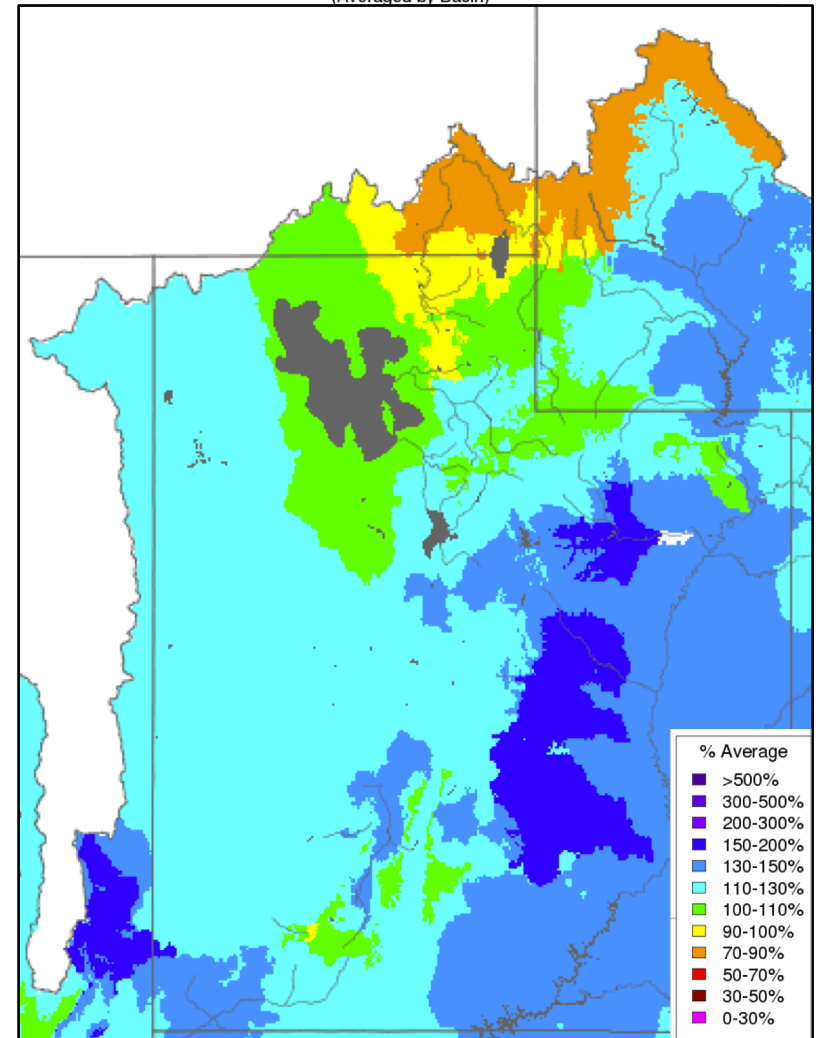
Water Year Precipitation, October 2017 - January 2018

(Averaged by Basin)



Water Year Precipitation, October 2018 - January 2019

(Averaged by Basin)

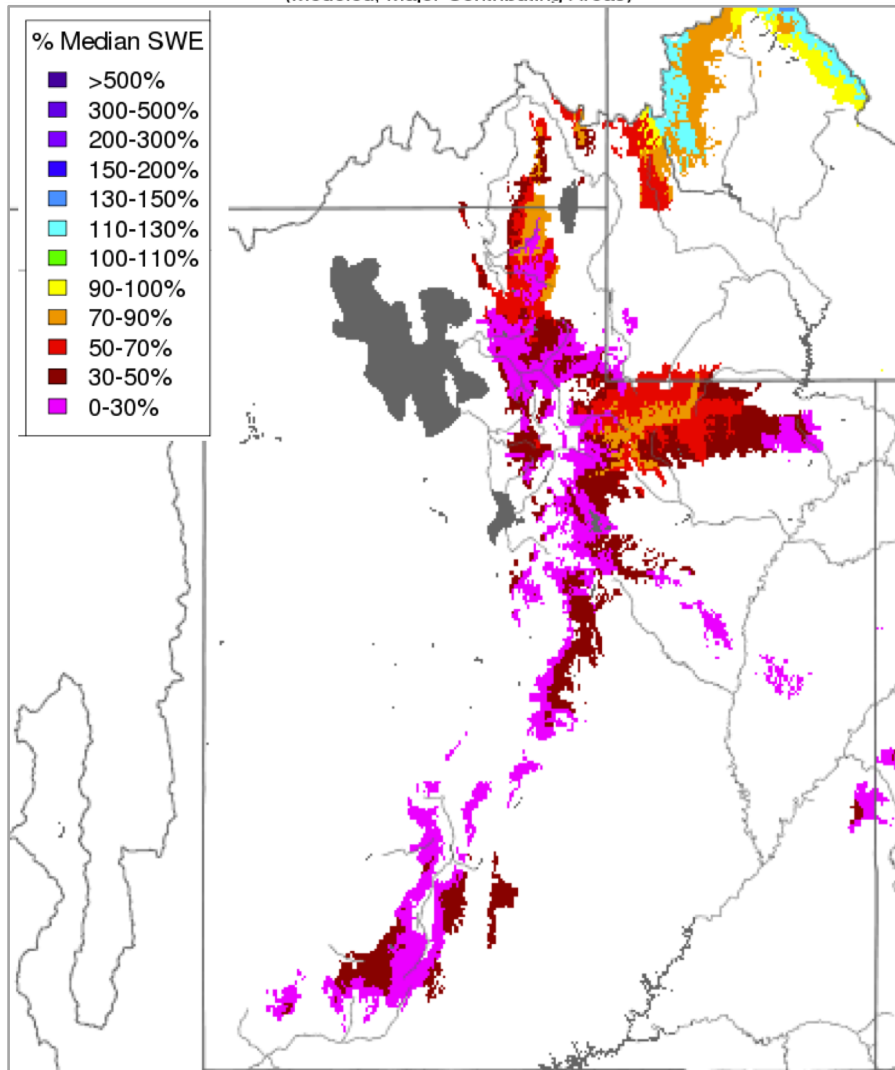


A much different start compared to last year

February 6th Snow Conditions (CBRFC hydrologic model)

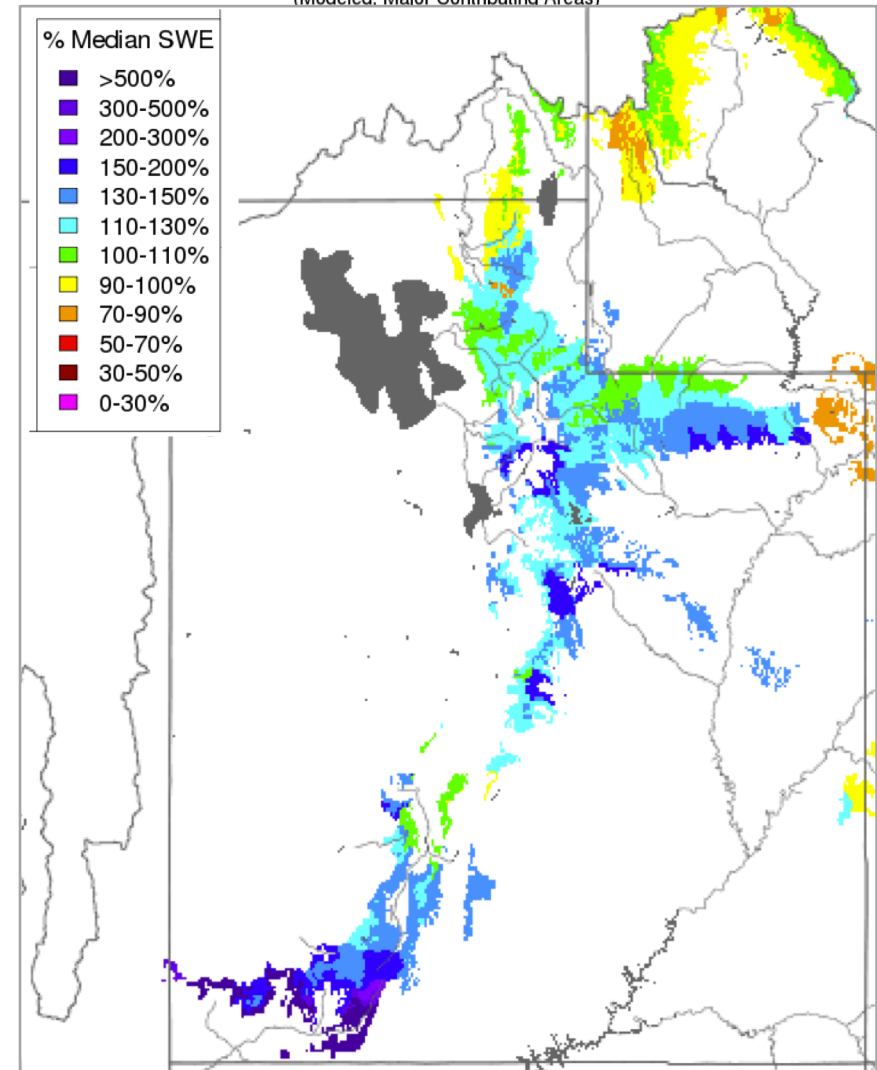
Snow Conditions - February 06 2018

(Modeled, Major Contributing Areas)



Snow Conditions - February 06 2019

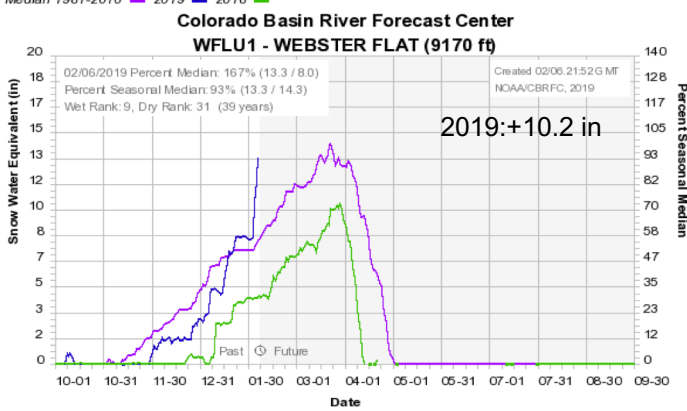
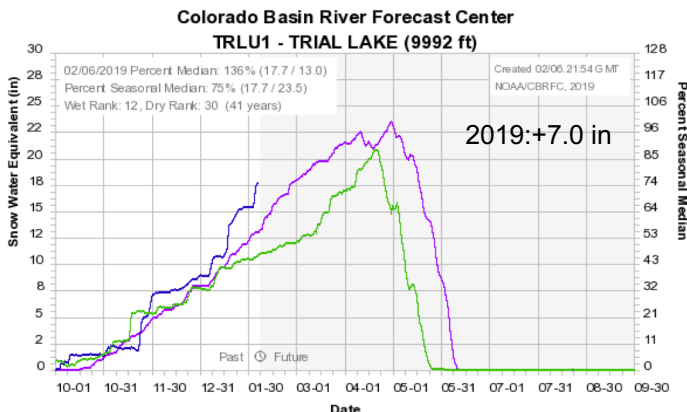
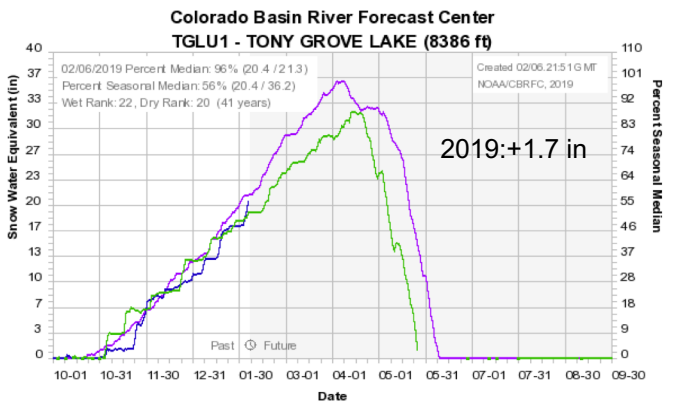
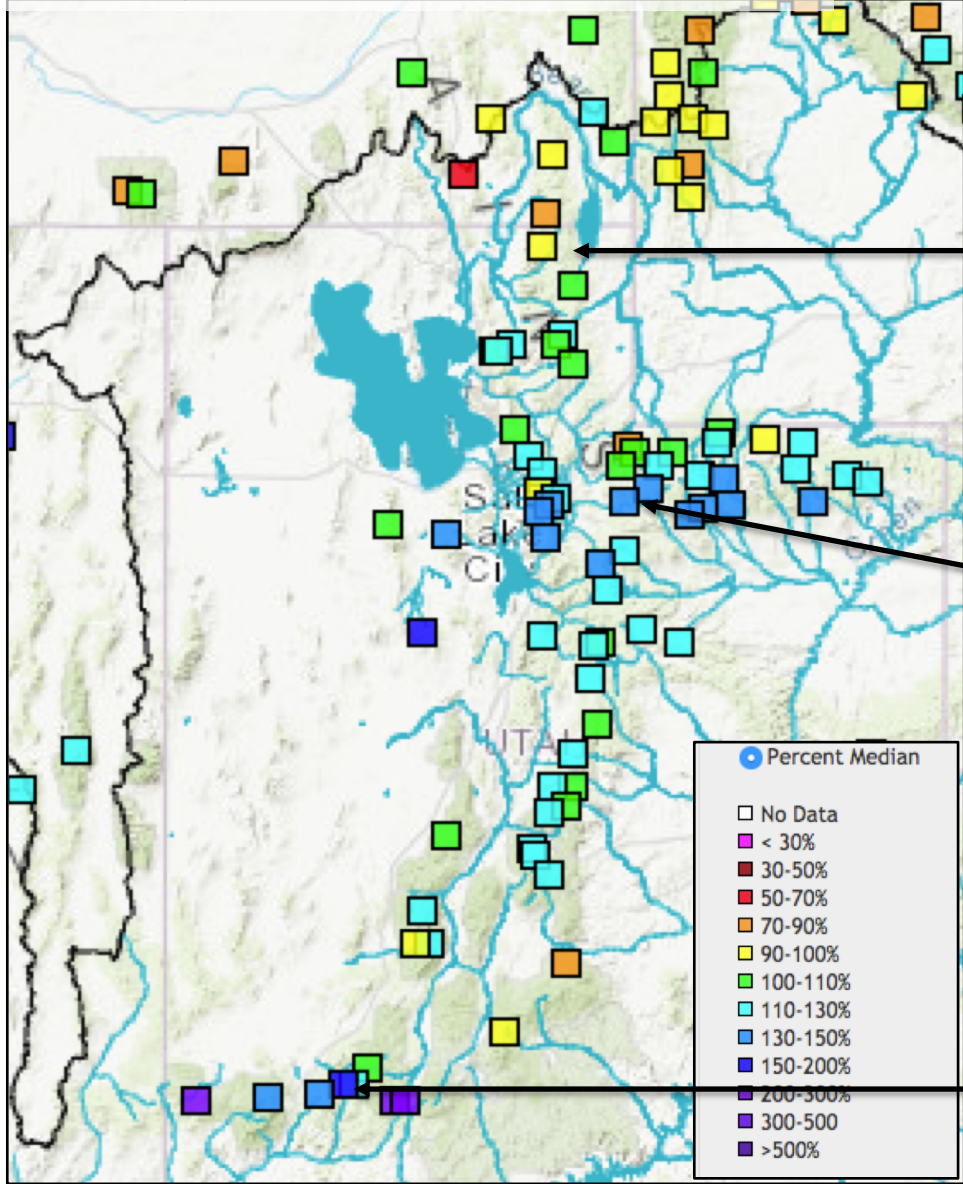
(Modeled, Major Contributing Areas)



Current Snow Conditions –(SNOTEL)

All areas similar or better than last year.
Some areas have exceeded last years peak

February 6th, 2019



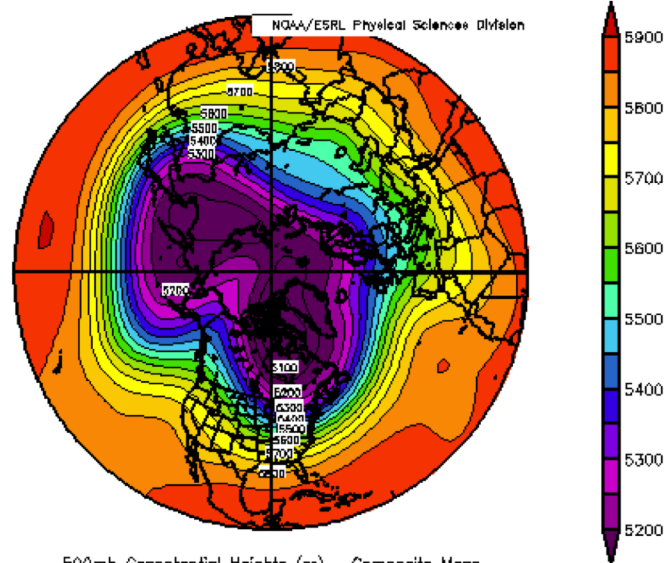
2018: Strong ridge / blocking pattern
Infrequent storms – extended dry periods

2019: Progressive pattern
Warmer Pacific / stronger southern jet stream

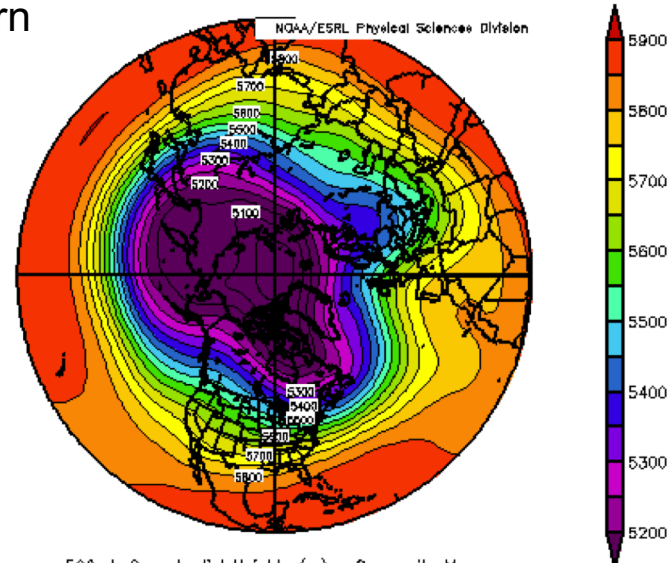
Mean atmospheric pattern

Dec 1 – Jan 15

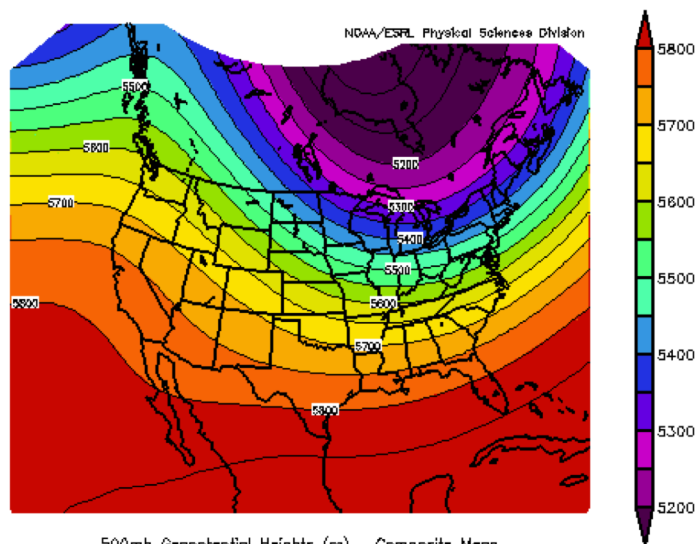
2018 vs 2019



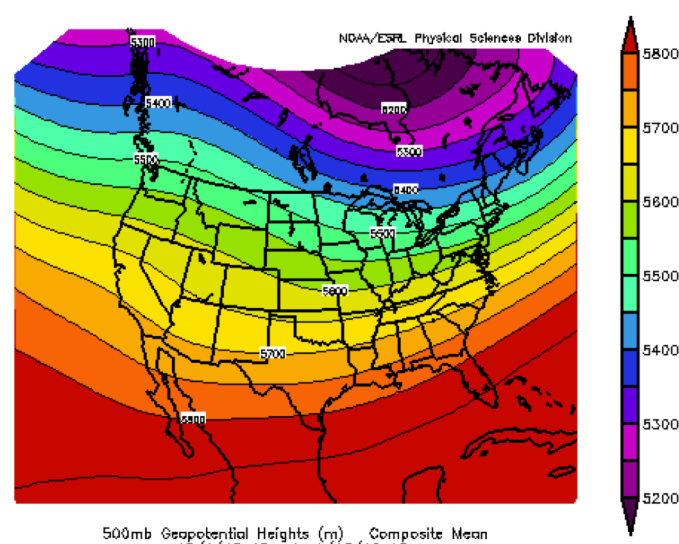
500mb Geopotential Heights (m) Composite Mean
12/1/17 12z to 1/15/18 12z
NCEP/NCAR Reanalysis



500mb Geopotential Heights (m) Composite Mean
12/1/18 12z to 1/15/19 12z
NCEP/NCAR Reanalysis

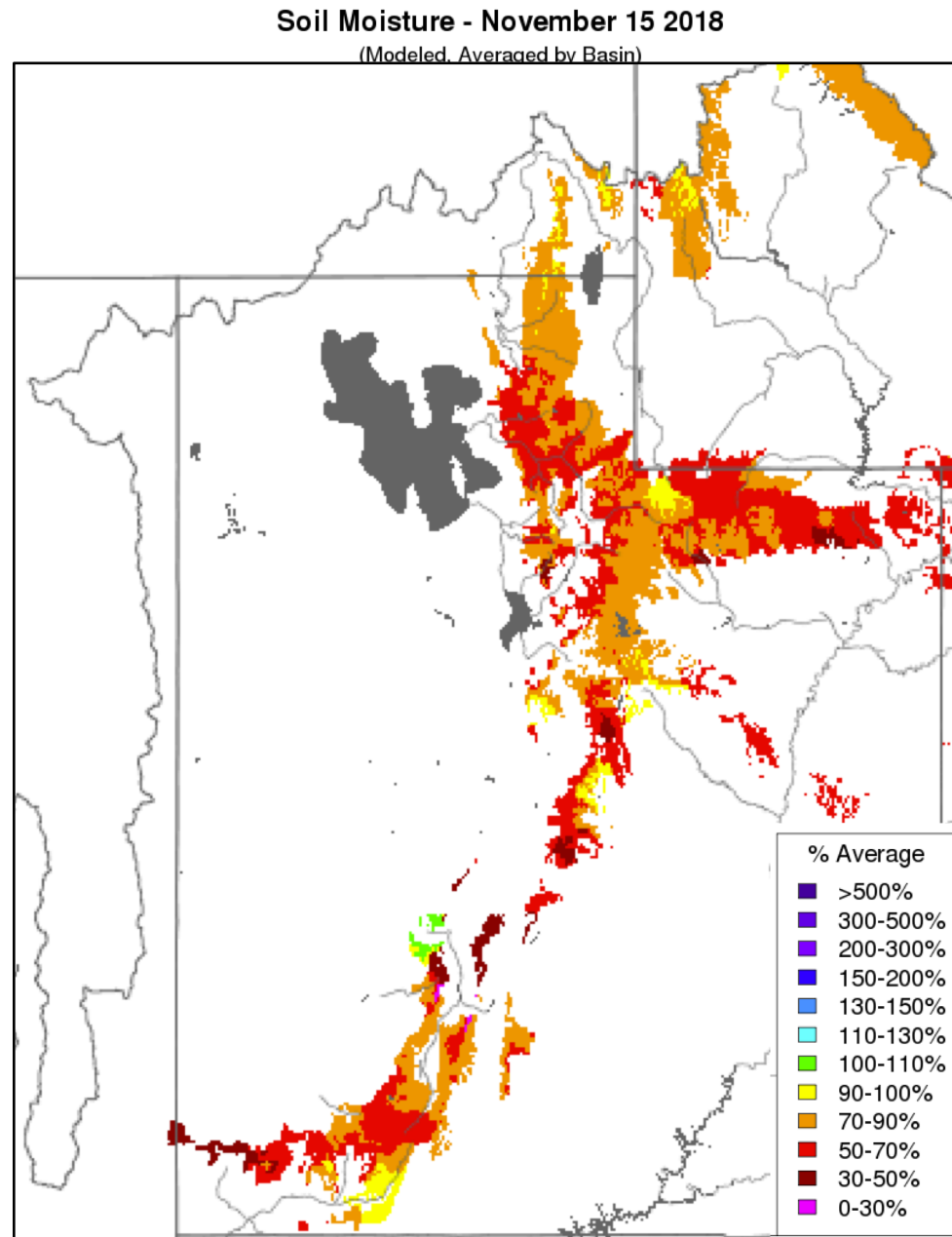


500mb Geopotential Heights (m) Composite Mean
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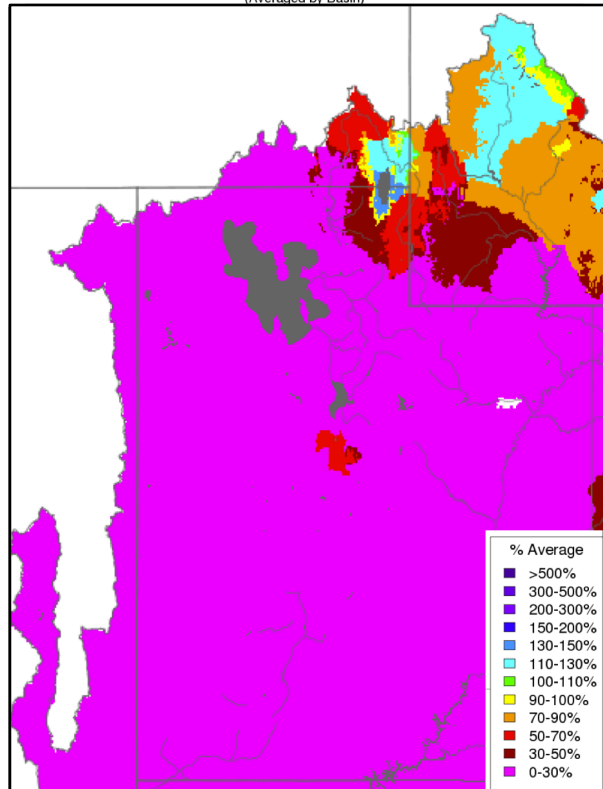
Dry soils entering the winter – May act to reduce some runoff volumes



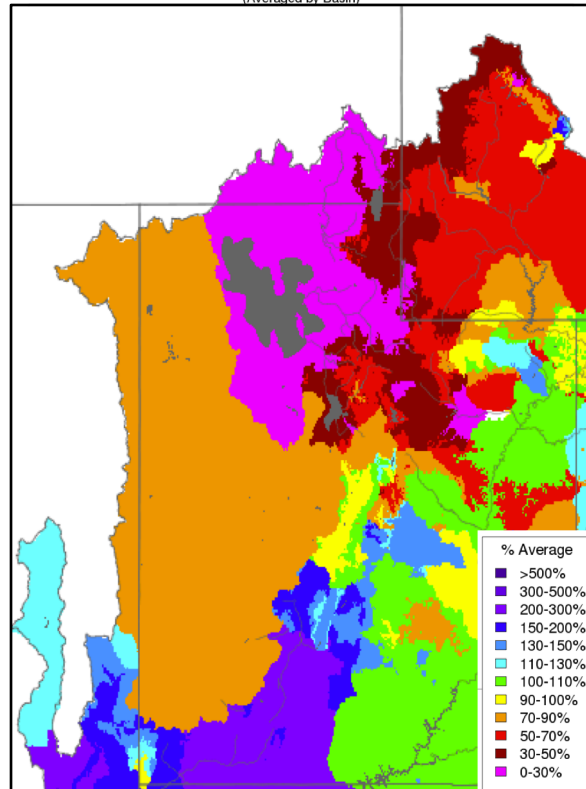
Conditions contributing to dry soil moisture conditions

- Very low runoff volumes in 2018
- Dry summer over most runoff producing areas
- Little monsoonal impact last summer

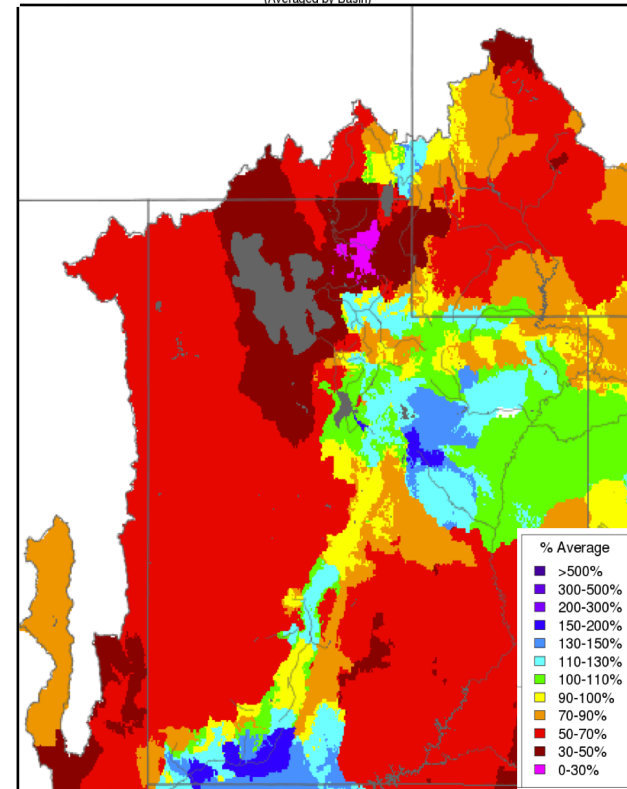
Monthly Precipitation - June 2018
(Averaged by Basin)



Monthly Precipitation - July 2018
(Averaged by Basin)



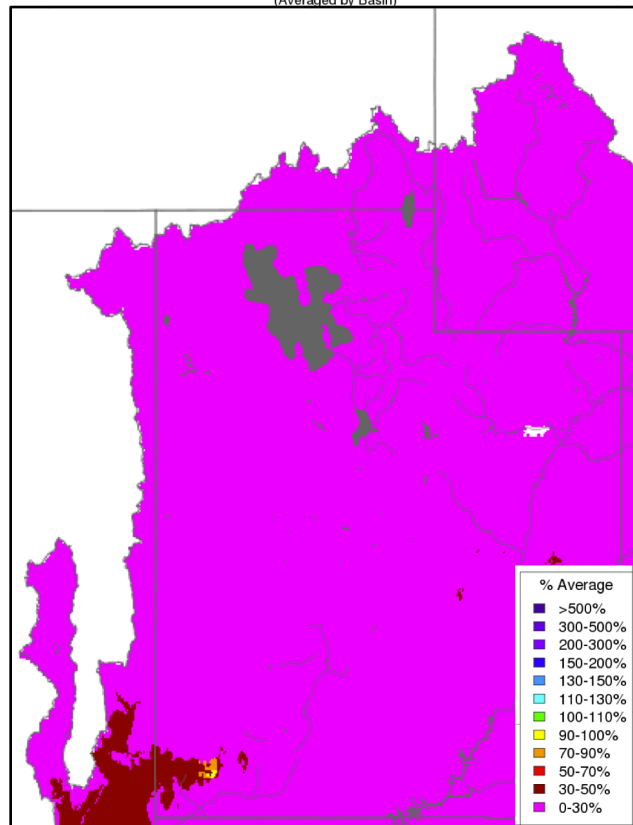
Monthly Precipitation - August 2018
(Averaged by Basin)



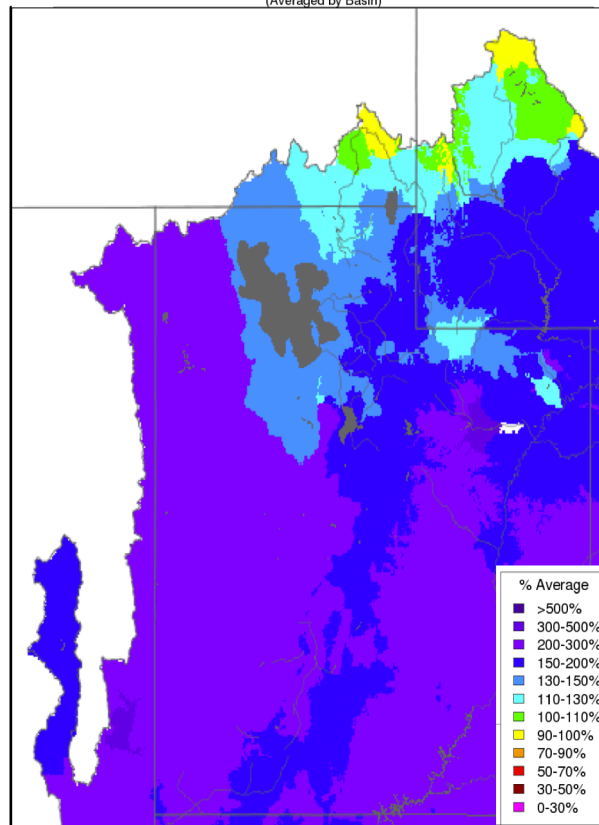
Conditions contributing to dry soil moisture conditions

- Very dry September (No monsoonal impact)
- Some rebound in baseflow due to a wet October
- Mix of conditions in November

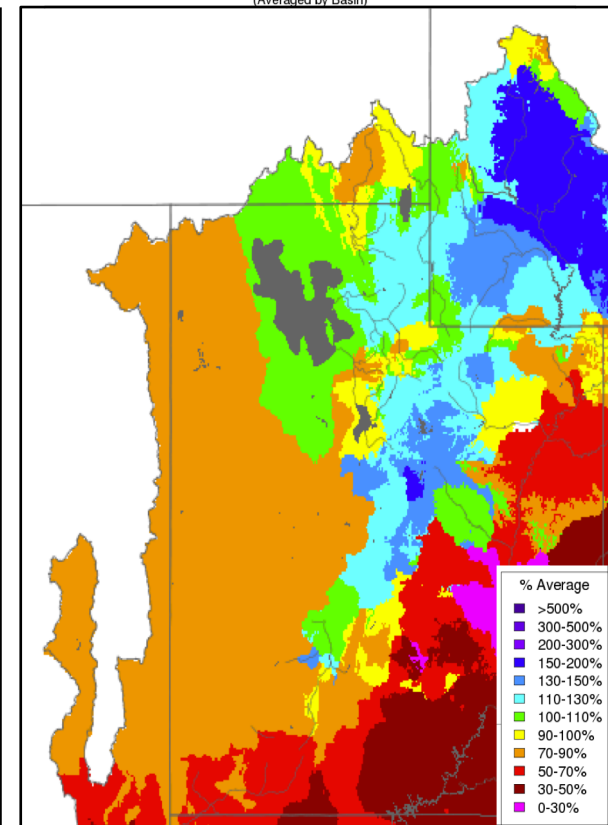
Monthly Precipitation - September 2018
(Averaged by Basin)



Monthly Precipitation - October 2018
(Averaged by Basin)

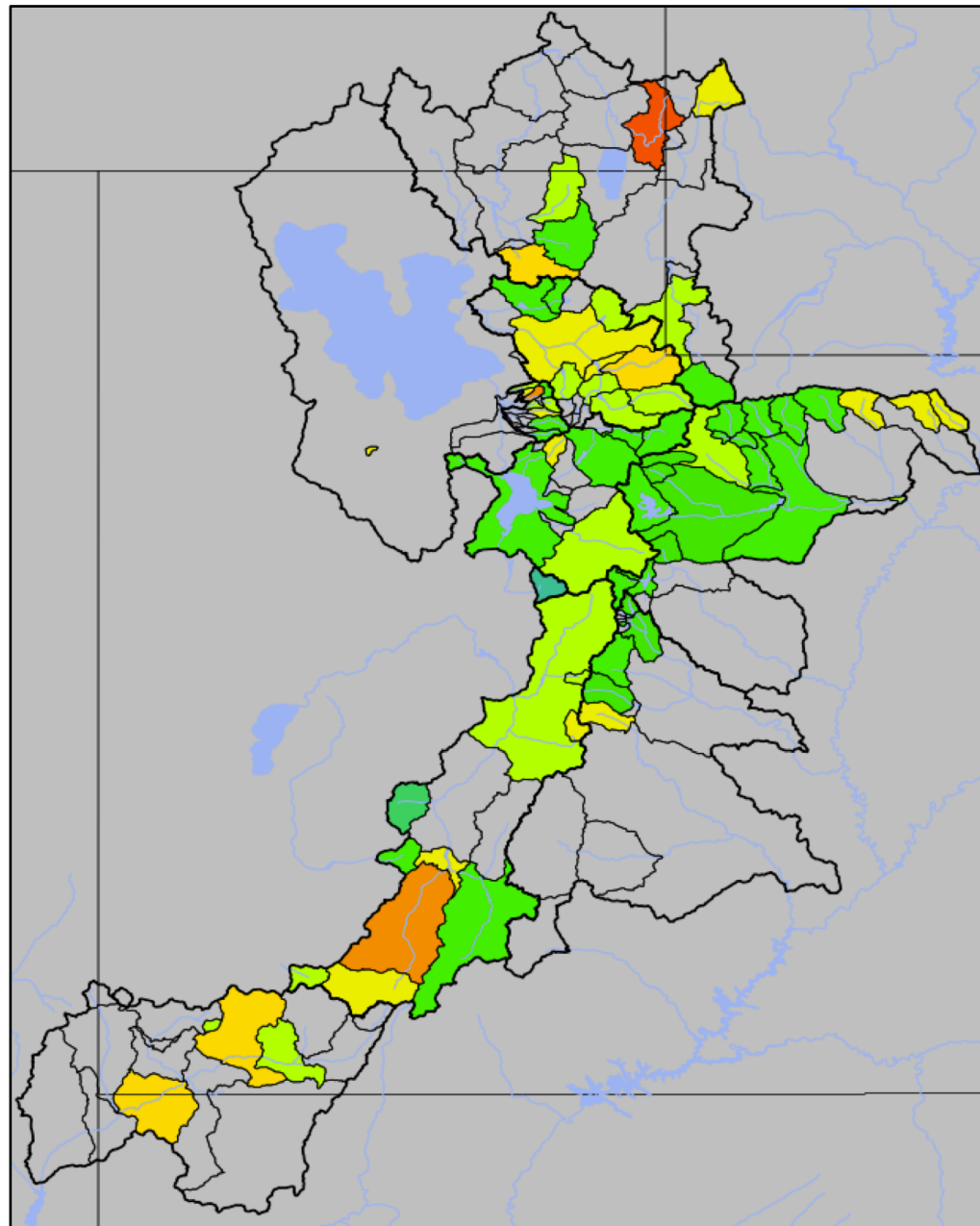
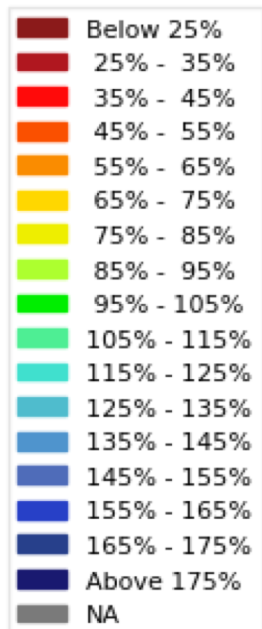


Monthly Precipitation - November 2018
(Averaged by Basin)



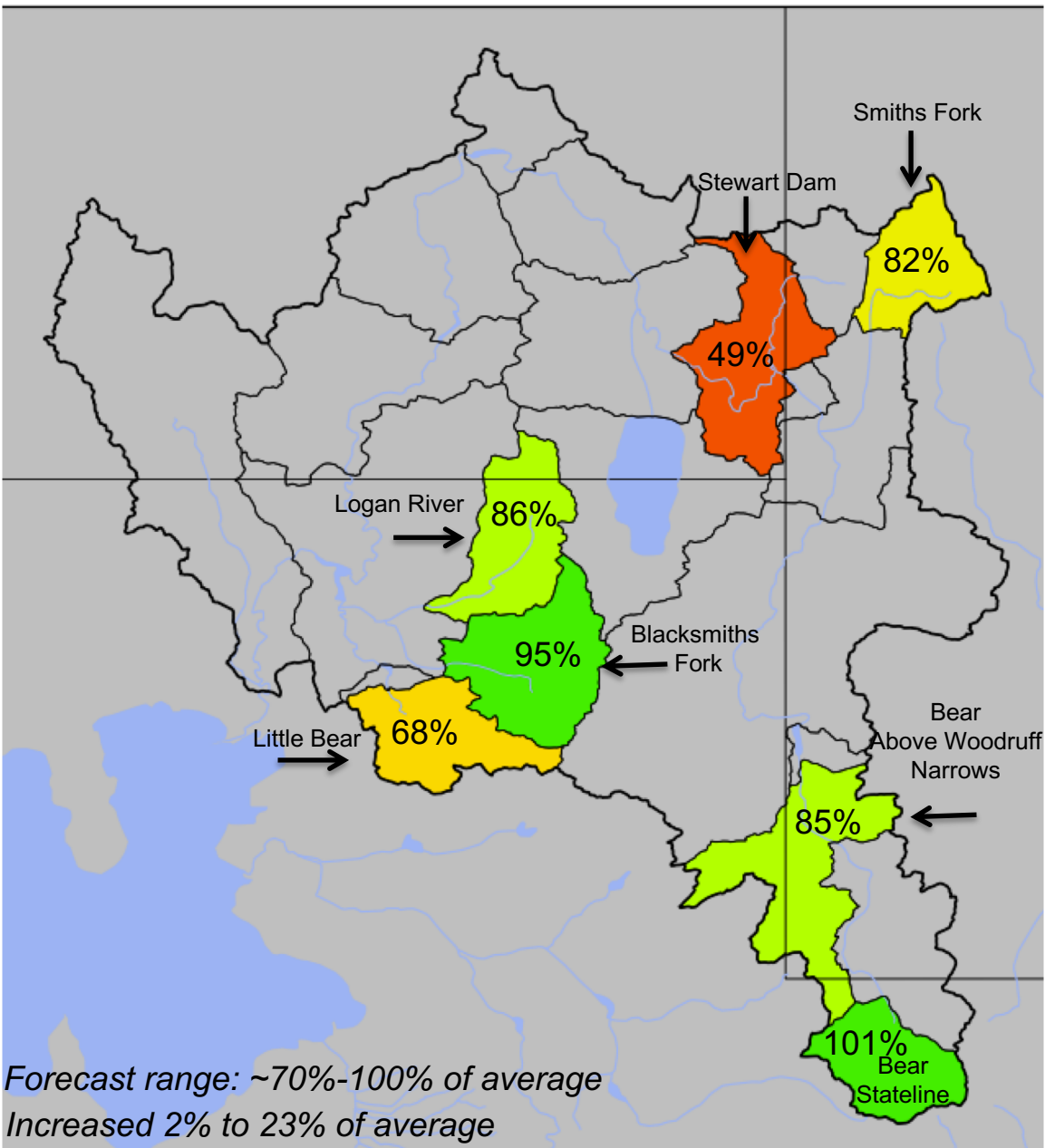
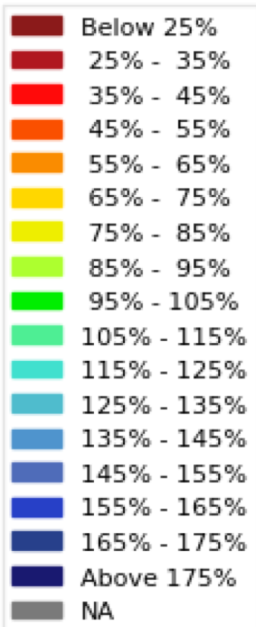
February 1st Water Supply Forecasts – Great Basin/Utah

April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)



February 1st Water Supply Forecasts – Bear River Basin

April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)



Median
Basin
Forecast:

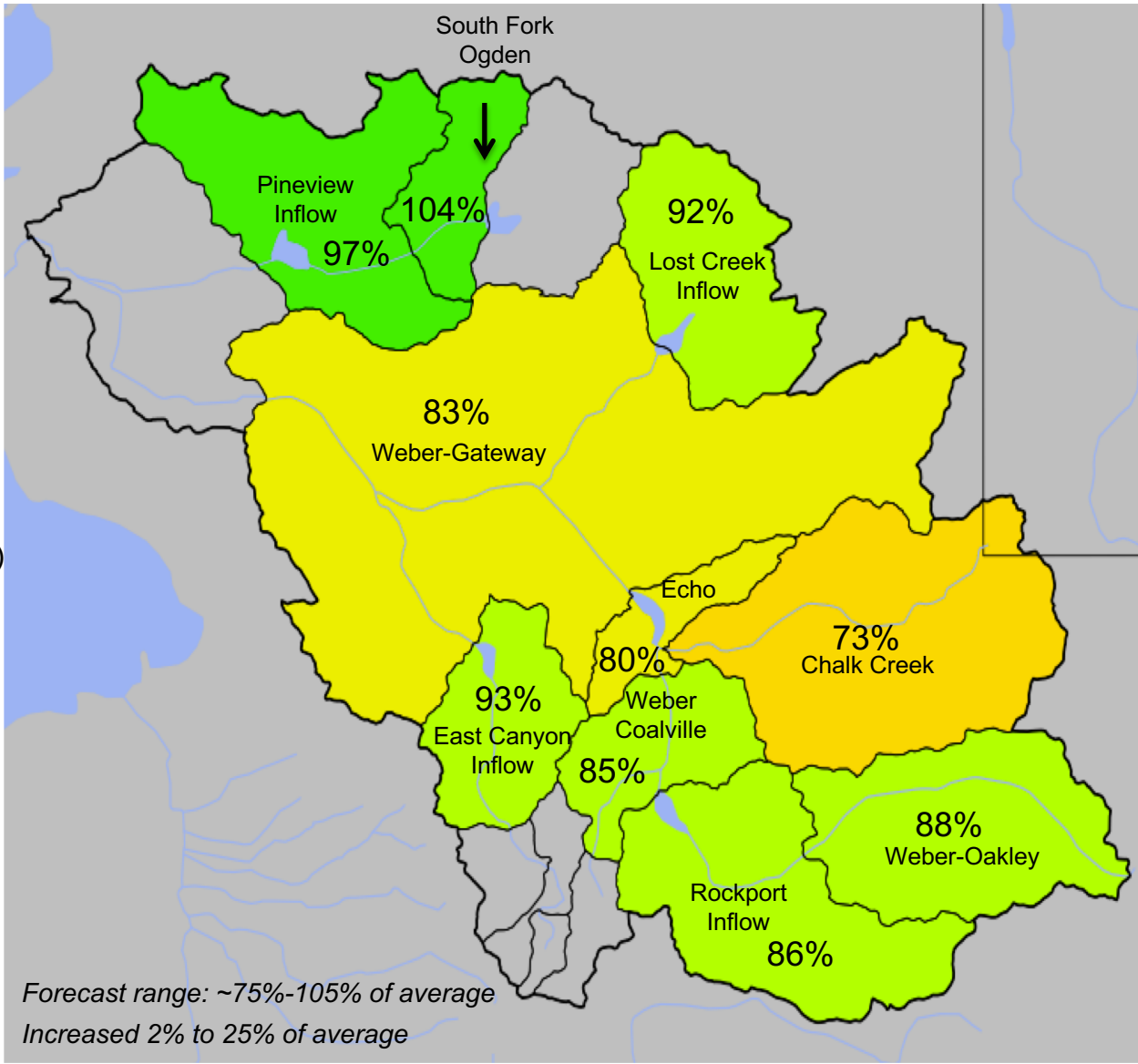
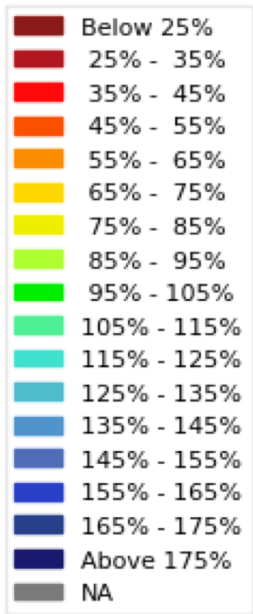
Jan – 70%
Feb – 85%

February 1st Water Supply Forecasts – Weber River Basin

Median
Basin
Forecast:

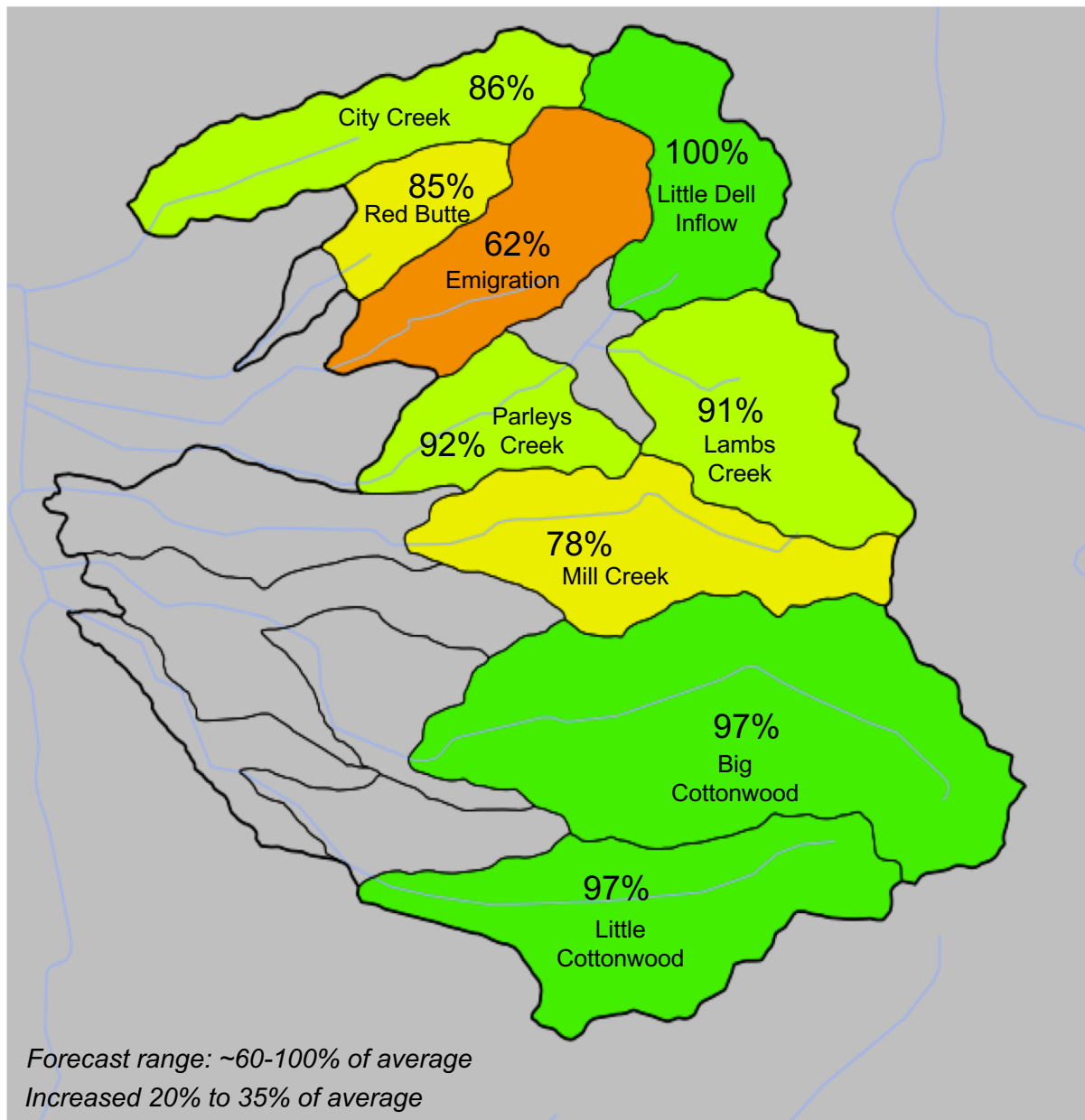
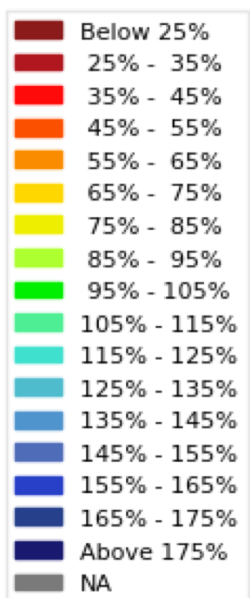
Jan – 75%
Feb – 85%

April-July Forecast
Streamflow Volumes
(% of 1981-2010 average)



February 1st Water Supply Forecasts – Six Creeks

April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)



Median
Basin
Forecast:

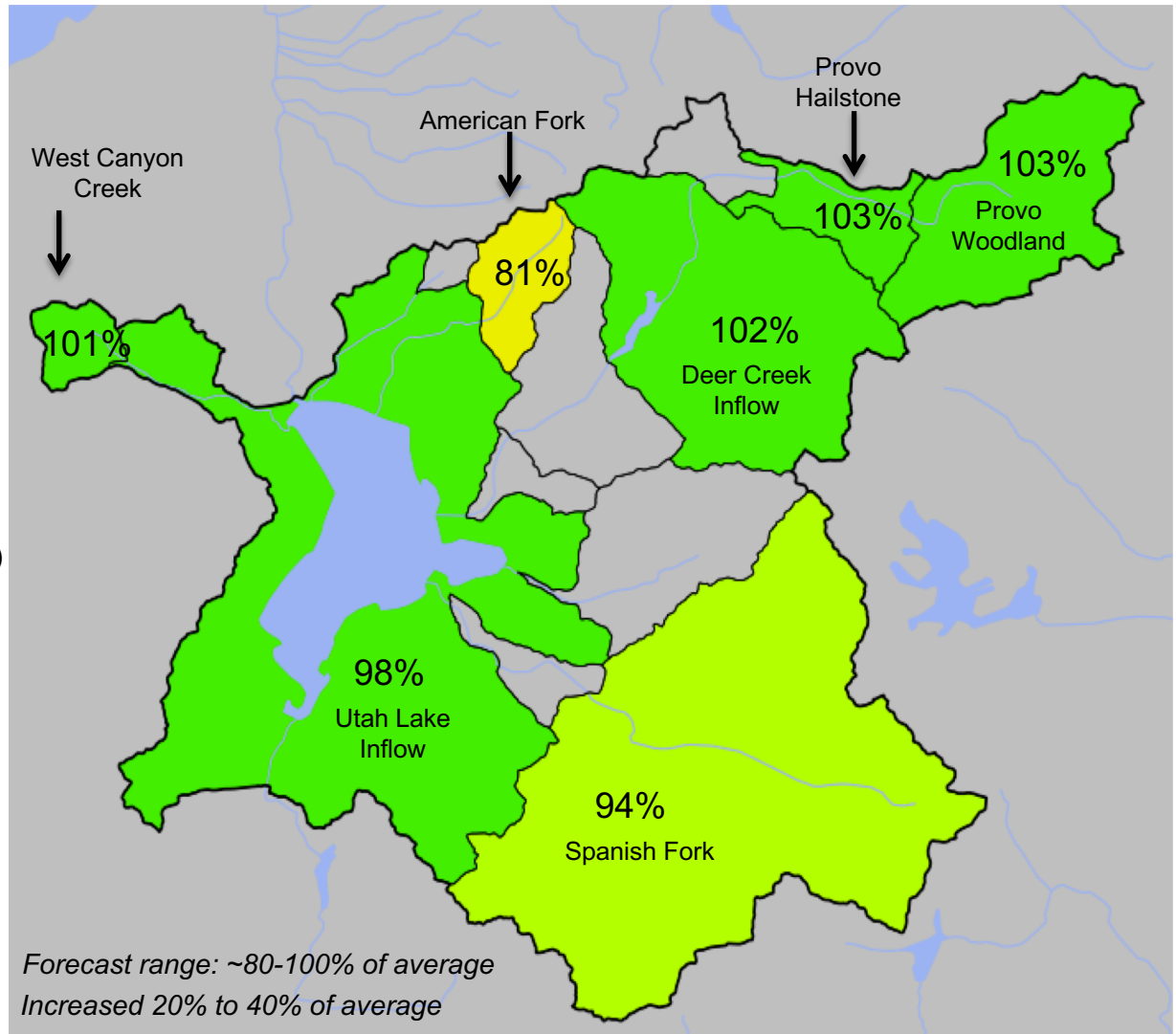
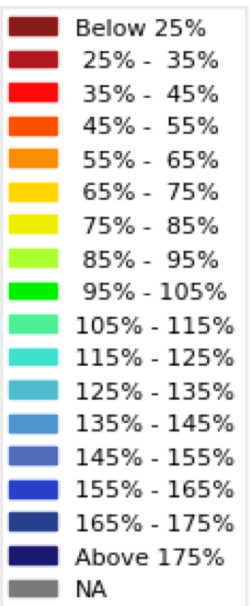
Jan – 65%
Feb – 90%

February 1st Water Supply Forecasts – Provo River/Utah Lake

Median
Basin
Forecast:

Jan – 70%
Feb – 100%

April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)

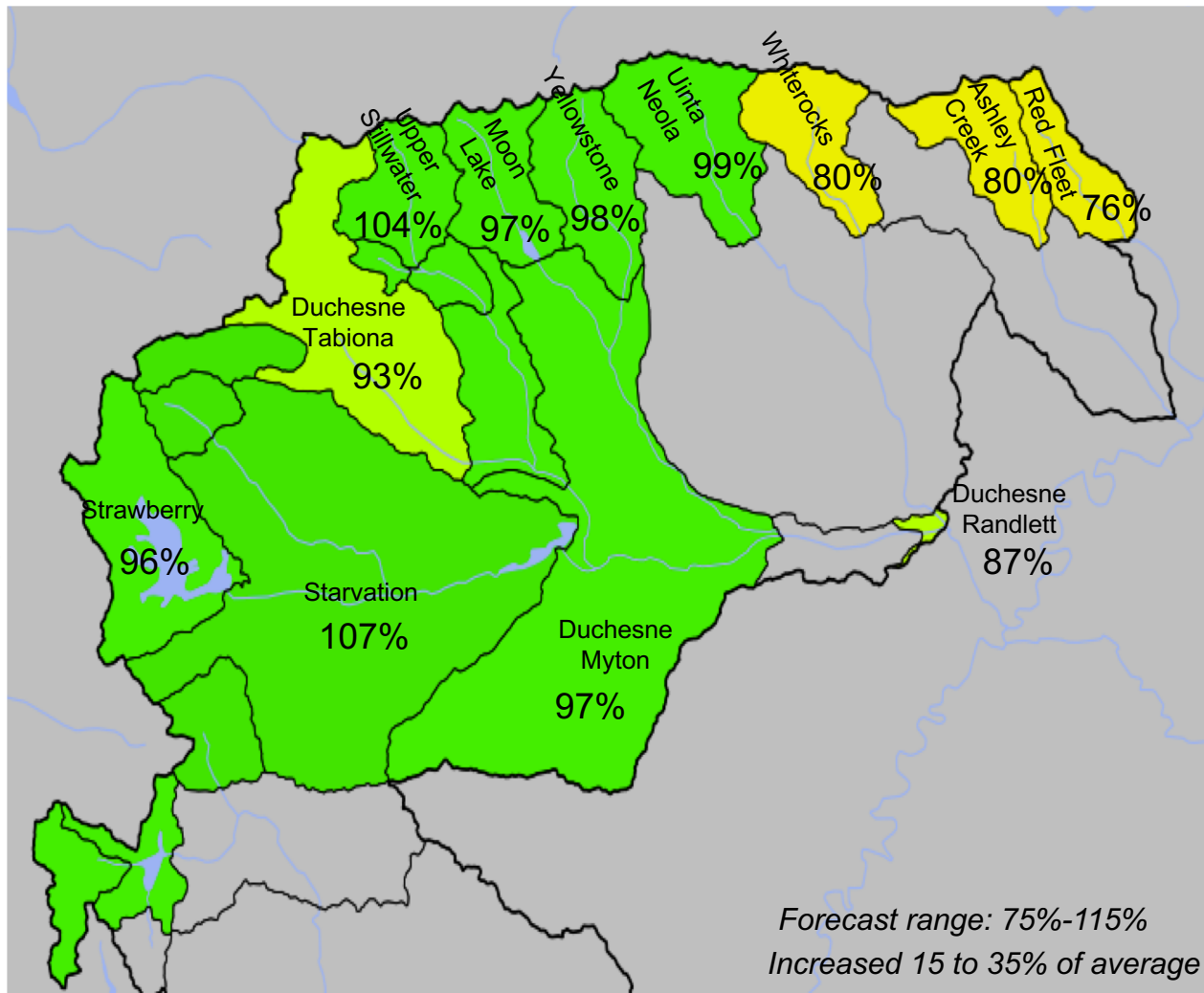
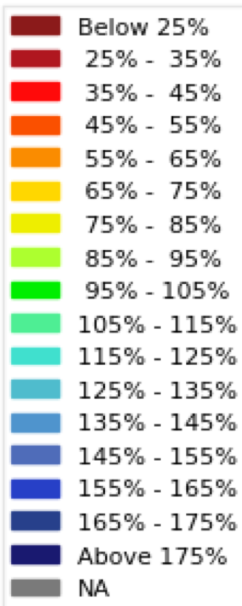


February 1st Water Supply Forecasts – Duchesne

Median
Basin
Forecast:

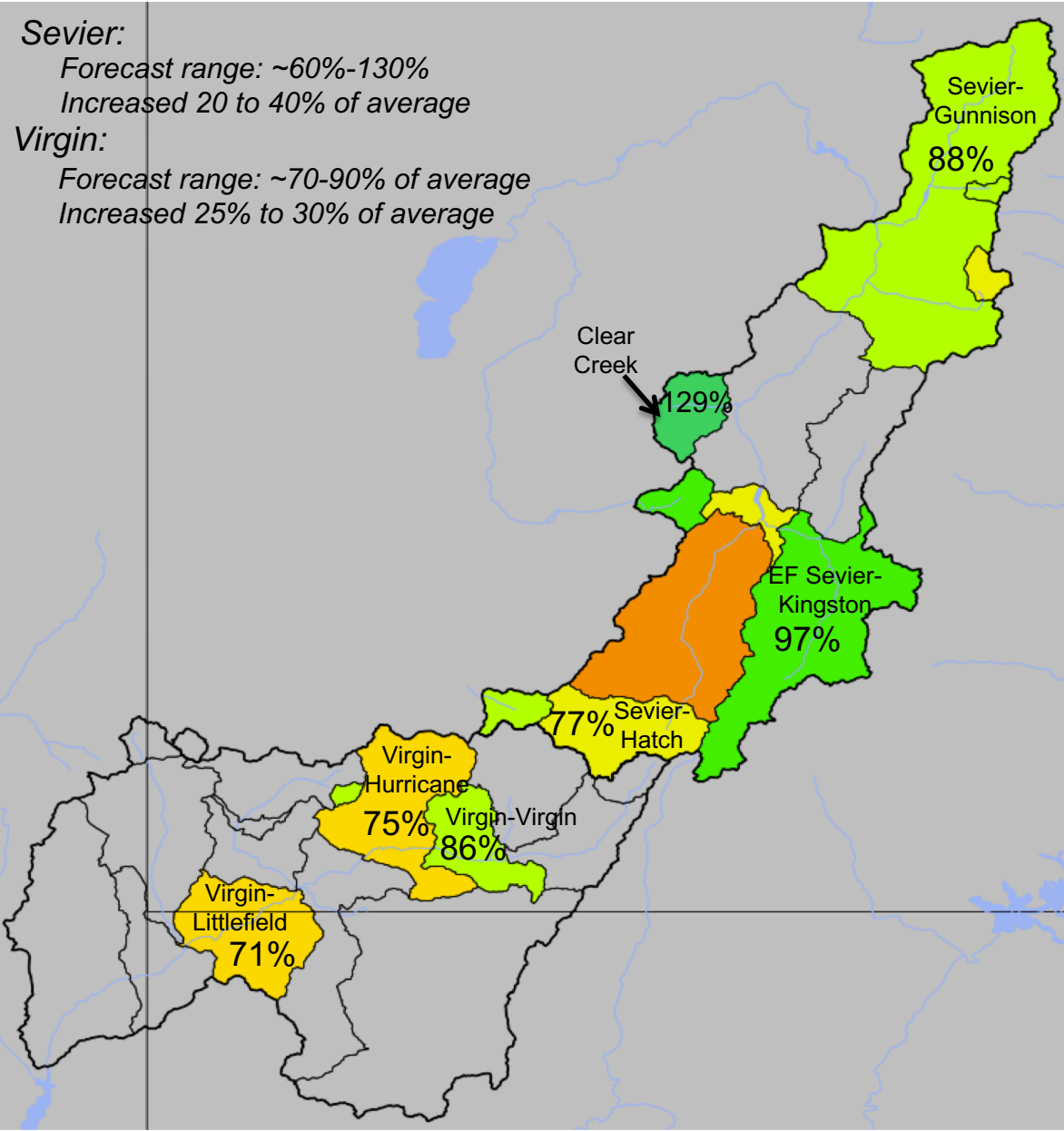
Jan – 75%
Feb – 100%

April-July
Forecast
Streamflow Volumes
(% of 1981-2010 average)



Forecast range: 75%-115%
Increased 15 to 35% of average

February 1st Water Supply Forecasts – Sevier/Virgin



Median Basin Forecast:

Sevier:
Jan - 60%
Feb - 90%

Virgin:
Jan - 50%
Feb - 80%

Tracking the model guidance between forecasts: Evolution Plots



COLORADO BASIN RIVER FORECAST CENTER

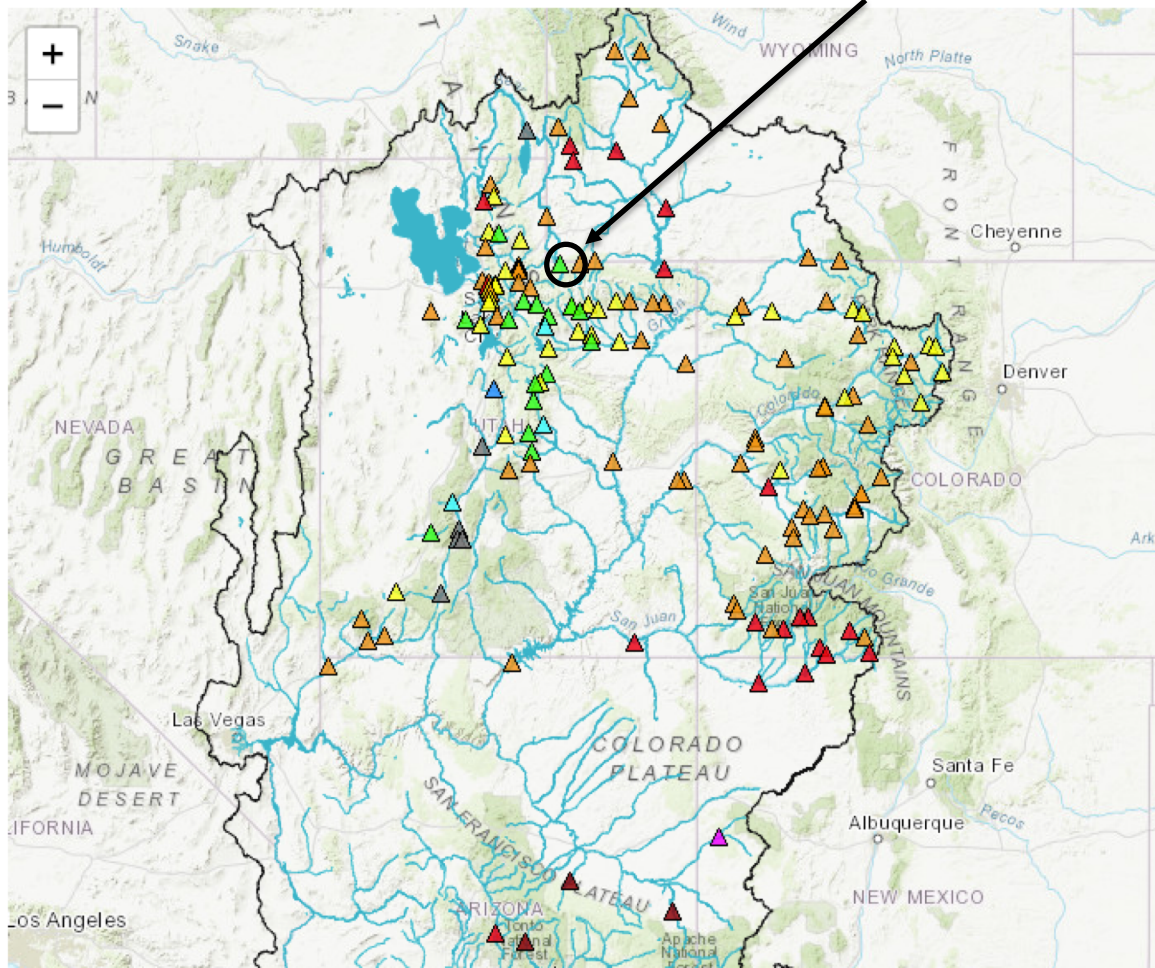
NATIONAL WEATHER SERVICE / NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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Conditions Map

[Help](#)

Click on Bear River- Stateline point

[River Conditions](#)[Snow Conditions](#)[Water Supply Forecasts](#)

First of Month Forecast Date: 2019-2-1

[Help](#)

Latest Model Run Date: 2019-02-05

☒ Show [Hide Other Types](#)

☒ First of Month Forecast Percent Average

☐ First of Month Forecast Percent Median

☐ Latest Model Guidance Percent Average

☐ Latest Model Guidance Percent Median

▲ < 30%

▲ 30-50%

▲ 50-70%

▲ 70-90%

▲ 90-100%

▲ 100-110%

▲ 110-130%

▲ 130-150%

▲ 150-200%

▲ 200-300%

▲ 300-500%

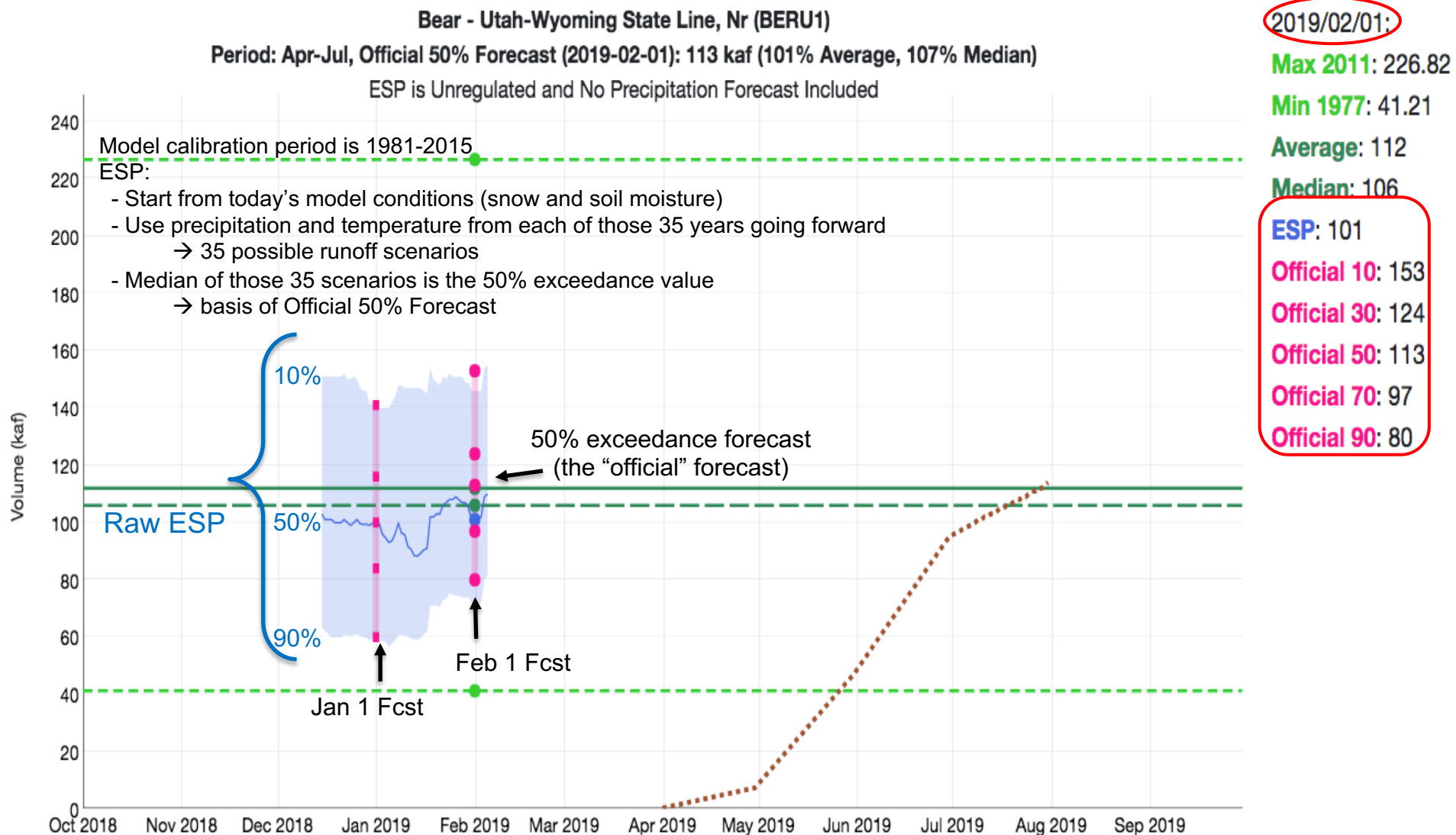
▲ >500%

▲ Regulated

△ No Forecast

Forecast Evolution Plot

Bear – UT/WY Stateline:113 kaf / 101%



Available on CBRFC web page by selecting sites from
map: <https://www.cbrfc.noaa.gov/lmap/lmap.php?interface=wsup>
list: <https://www.cbrfc.noaa.gov/rmap/wsupsuplist.php>

Forecast Evolution Plot

Weber – Oakley: 104 kaf / 88%

Weber - Oakley, Nr (OAWU1)

Period: Apr-Jul, Official 50% Forecast (2019-02-01): 104 kaf (88% Average, 90% Median)

ESP is Unregulated and No Precipitation Forecast Included

2019/02/01:

Max 1907: 254.23

Min 1934: 35.47

Average: 118

Median: 116

ESP: 92.5

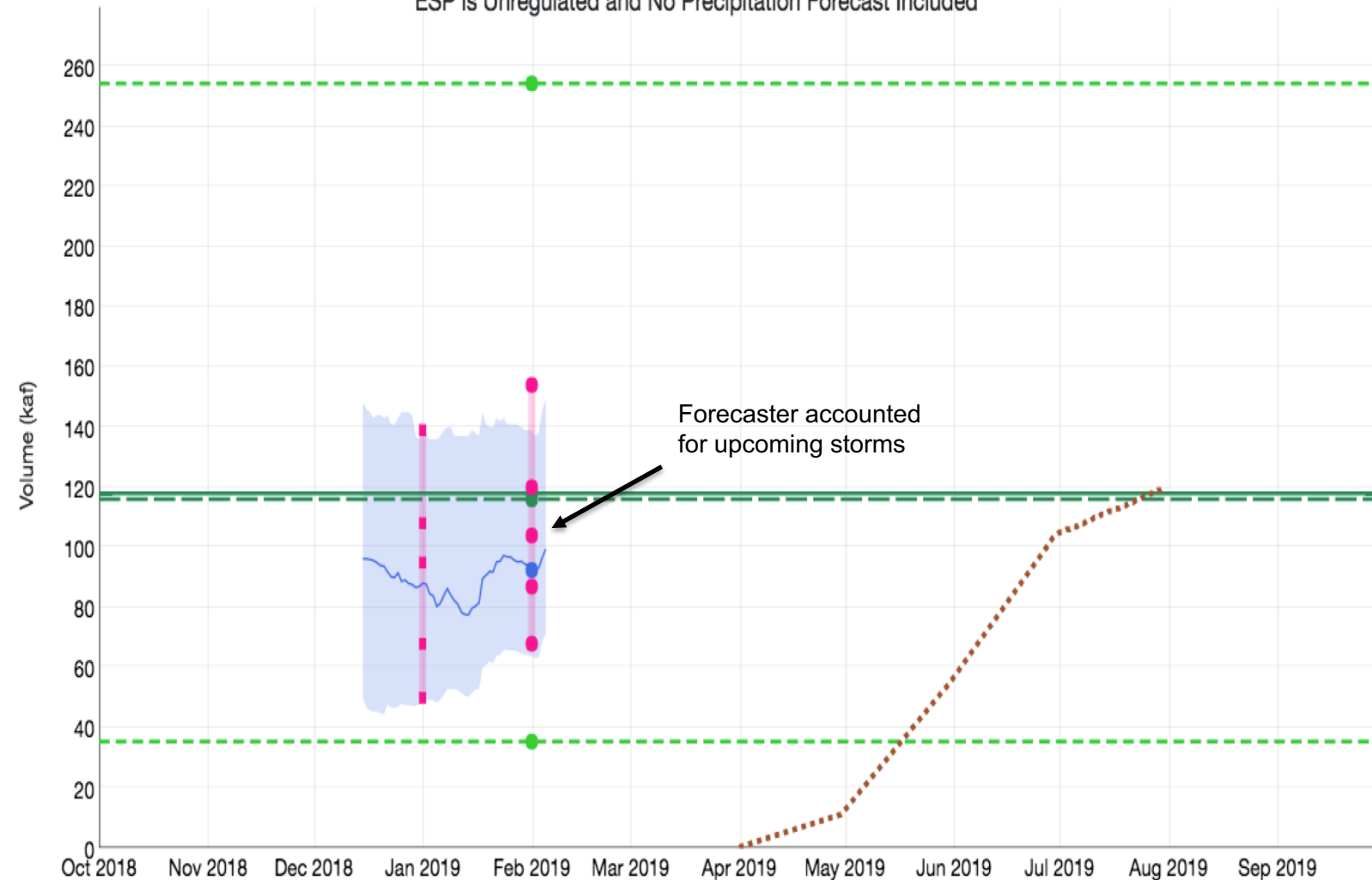
Official 10: 154

Official 30: 120

Official 50: 104

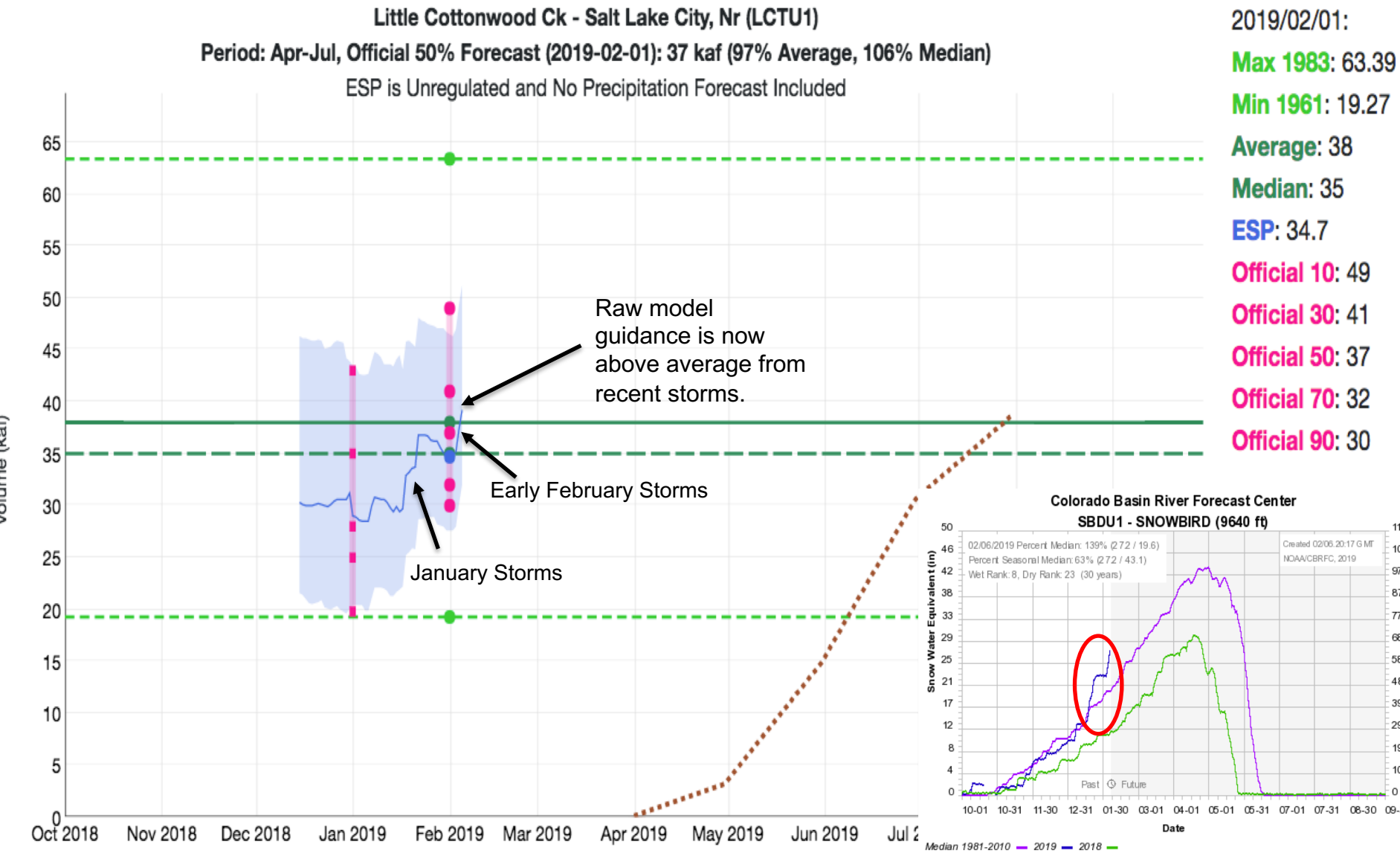
Official 70: 87

Official 90: 68



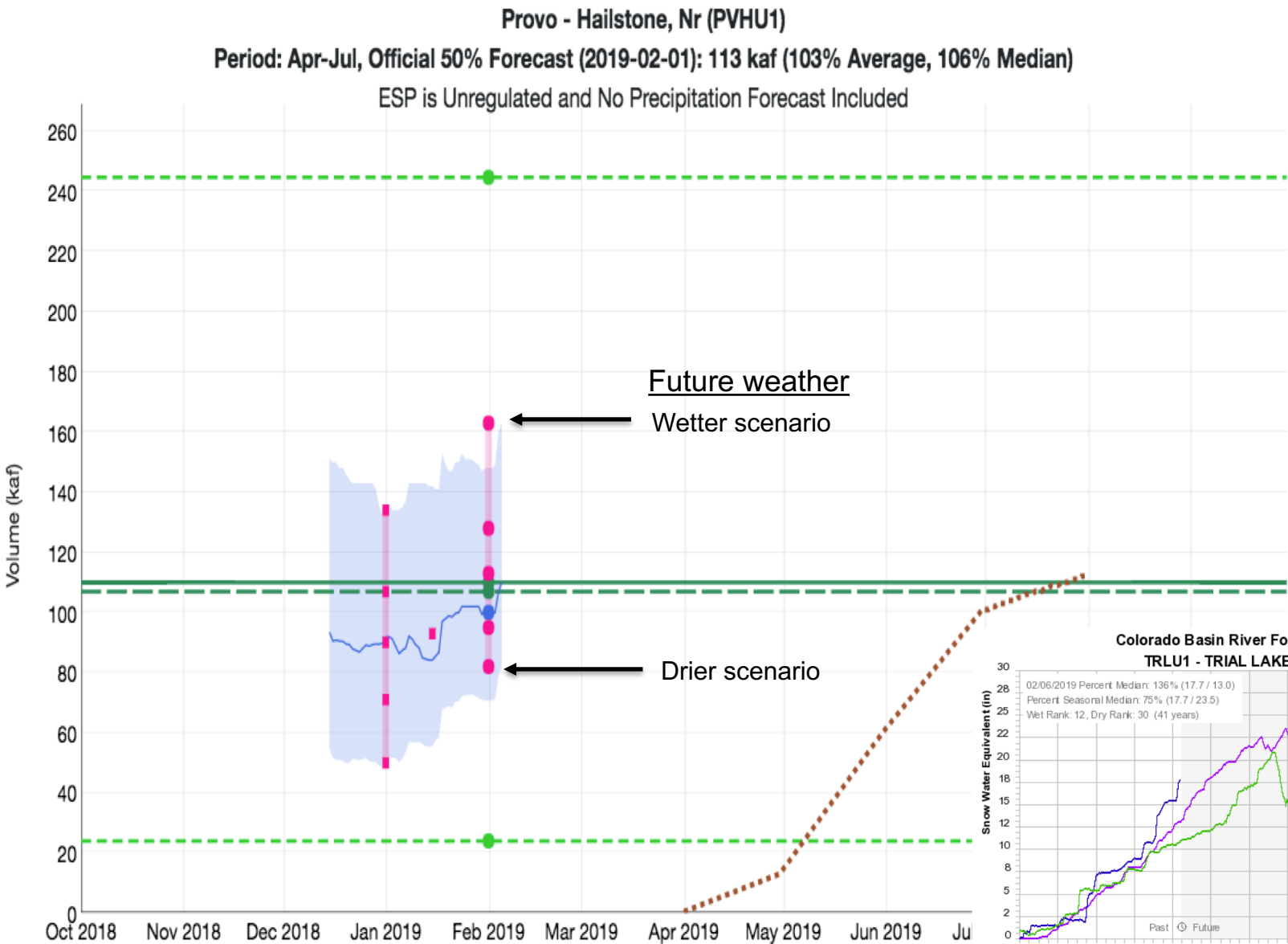
Forecast Evolution Plot

Little Cottonwood Creek: 37 kaf / 97%



Forecast Evolution Plot

Provo – Hailstone (Jordanelle Inflow) – 113 kaf / 103%



2019/02/01:

Max 2011: 244.76

Min 1977: 23.99

Average: 110

Median: 107

ESP: 100

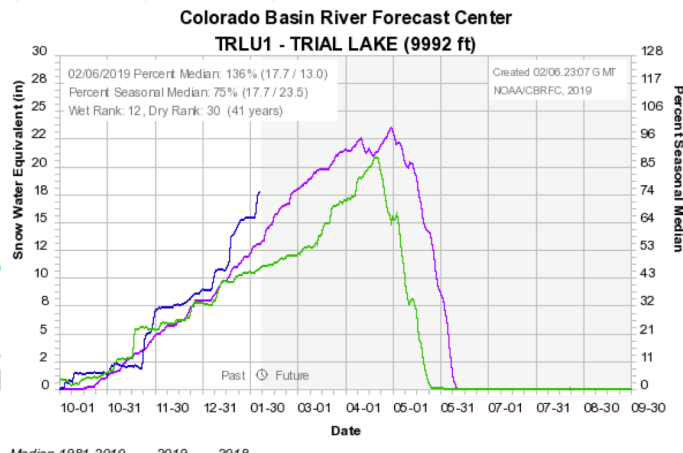
Official 10: 163

Official 30: 128

Official 50: 113

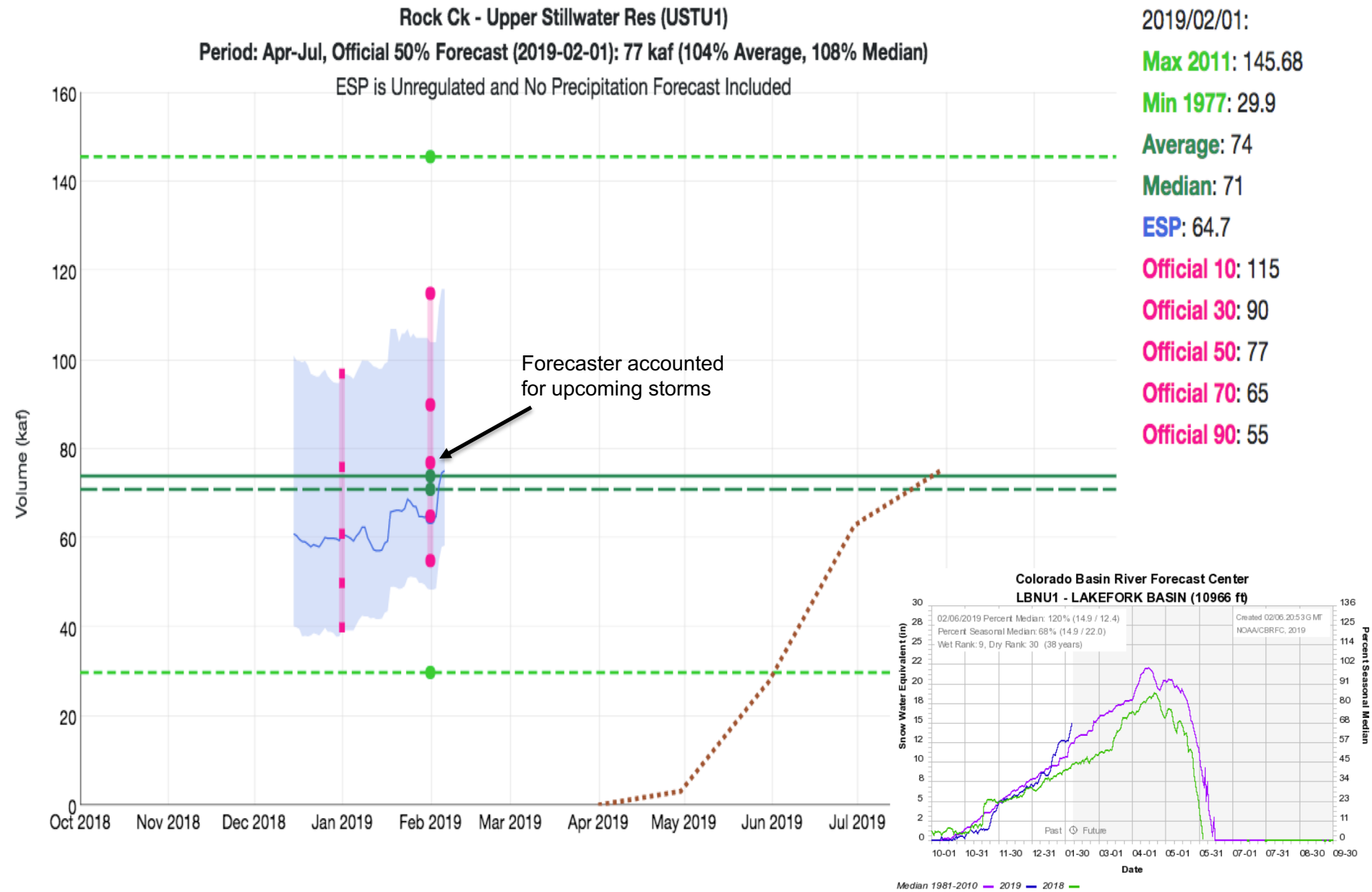
Official 70: 95

Official 90: 82



Forecast Evolution Plot

Rock Creek – Upper Stillwater Reservoir Inflow – 77 kaf / 104%



Forecast Validation: Historical model error improves January to February

Historical Model Error 1981-2010

February forecast error is generally an improvement compared to the January error

-Significant snow accumulation period remains

Forecasts are better than just going with average

Error tends to decrease each month into the spring

Where We Do Better:

Headwaters

Primarily snow melt basins

Known diversions / demands

Where We Do Worse:

Lower elevations (rain or early melt)

Downstream of diversions / irrigation

Little is known about diversions / demands

Map is available at:

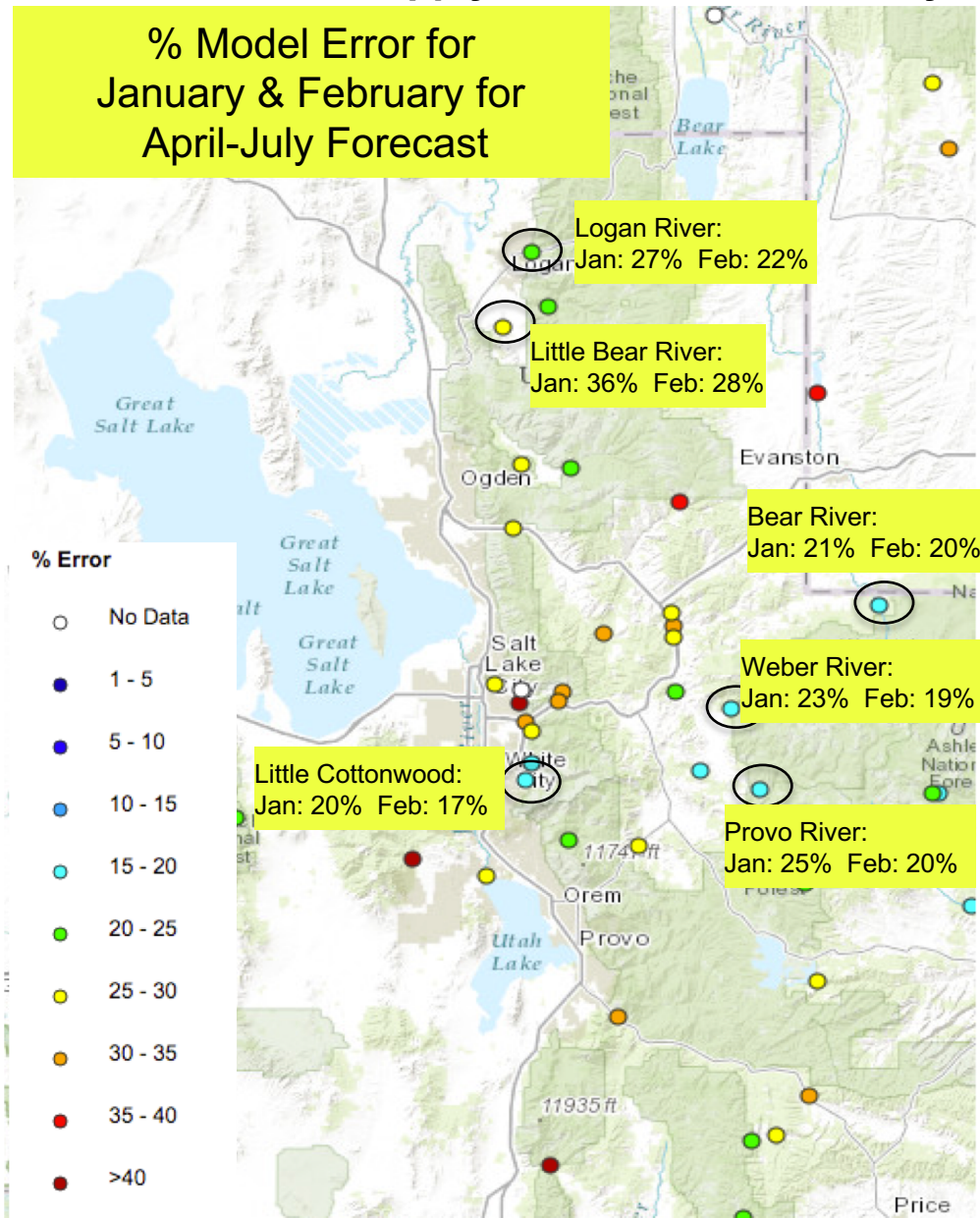
<https://www.cbrfc.noaa.gov/arc/verif/verif.php>

From Water Supply drop down menu

→ select Historical Verification Map

Historical Water Supply Verification - February

% Model Error for
January & February for
April-July Forecast

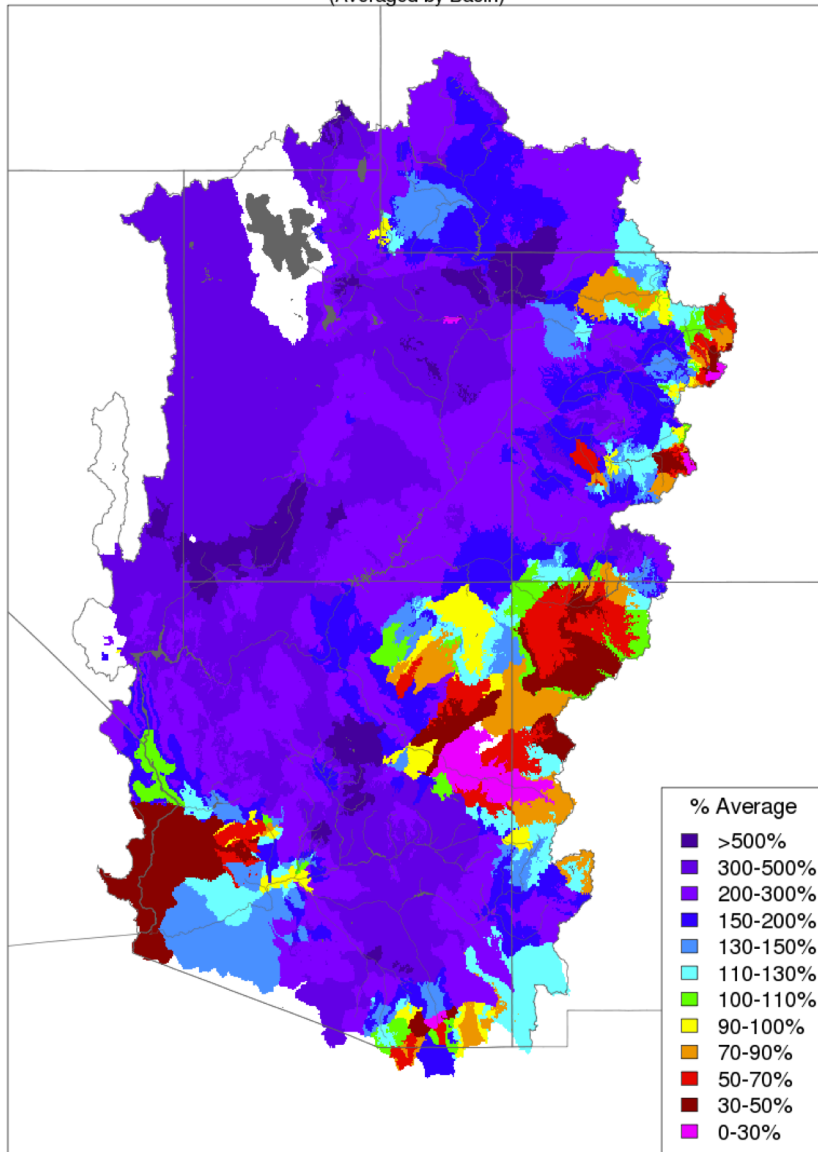


February 1st – 6th precipitation

The early February precipitation was taken into account for many of the water supply forecasts

Month to Date Precipitation - February 06 2019

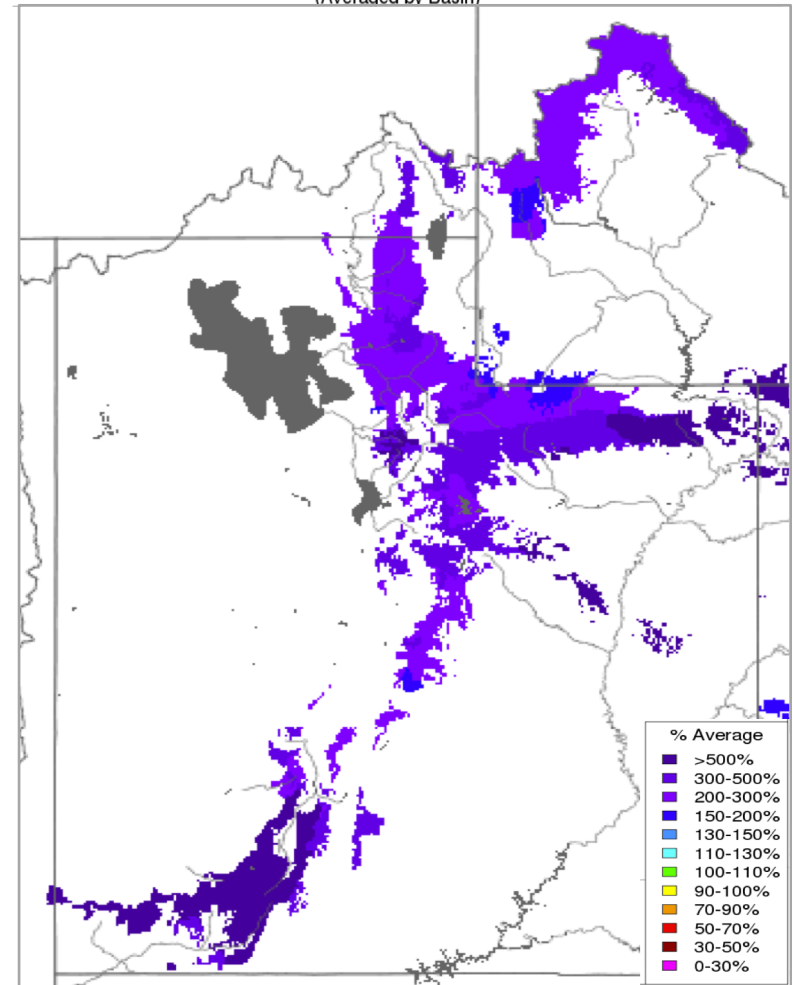
(Averaged by Basin)



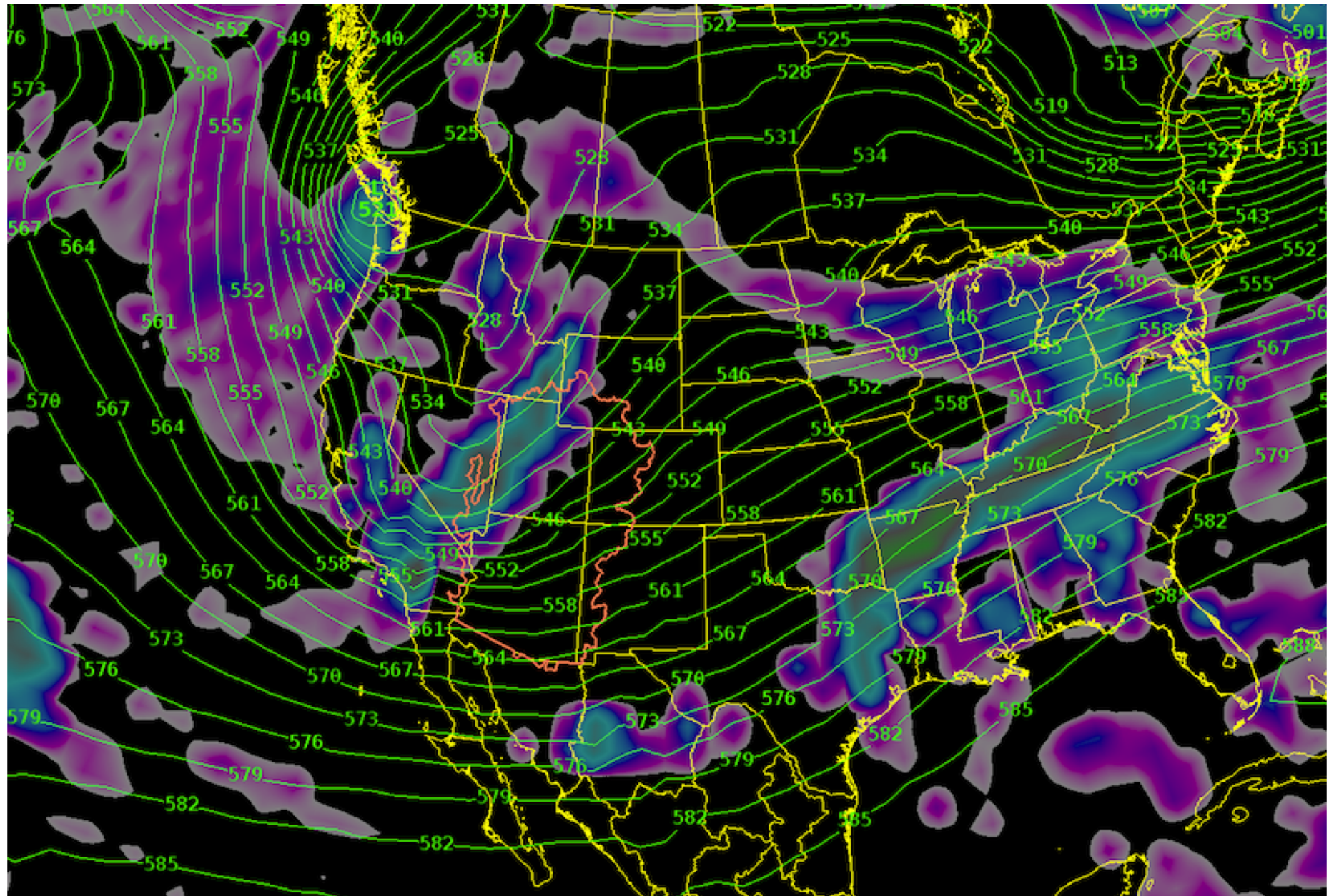
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Month to Date Precipitation - February 06 2019

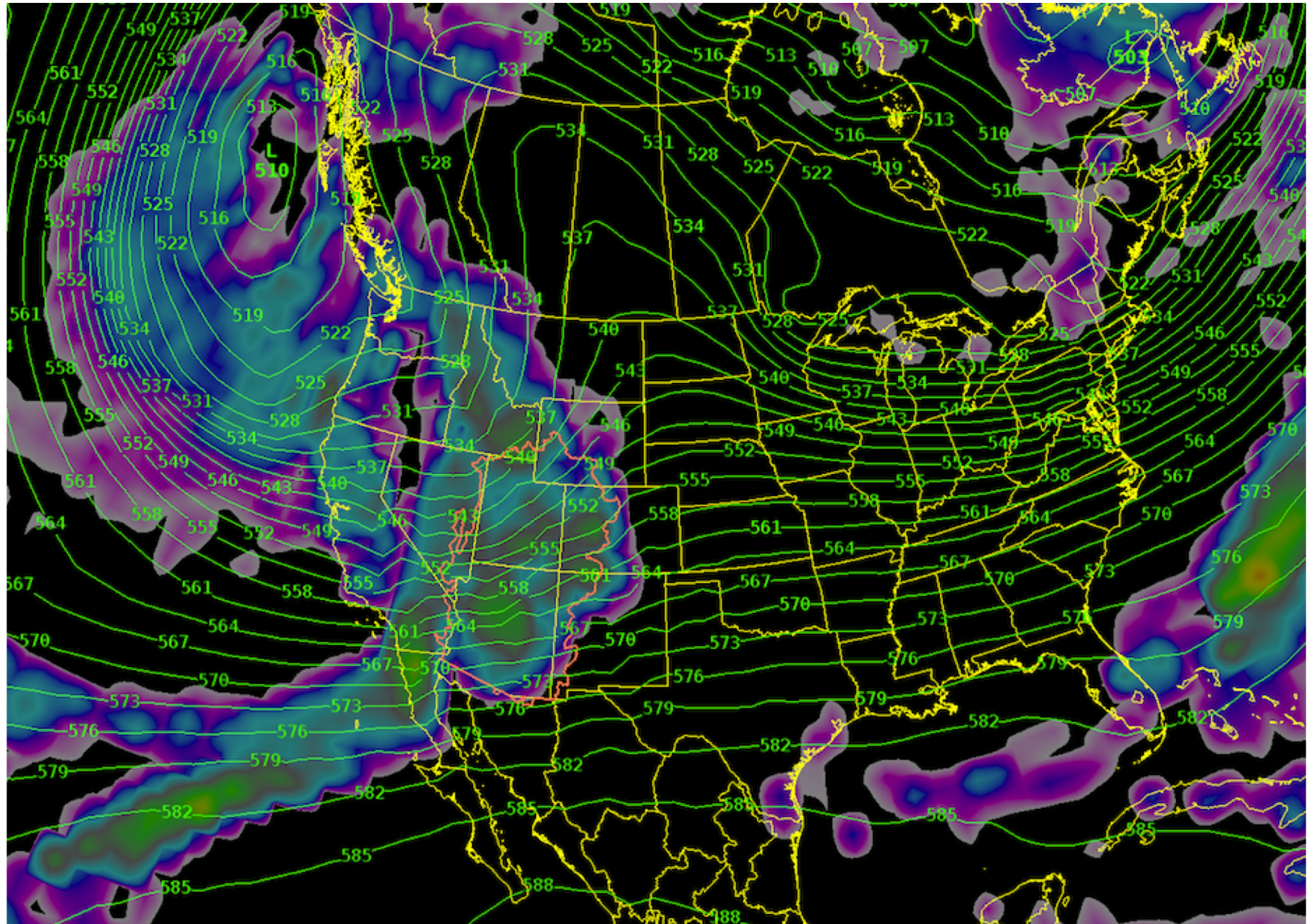
(Averaged by Basin)



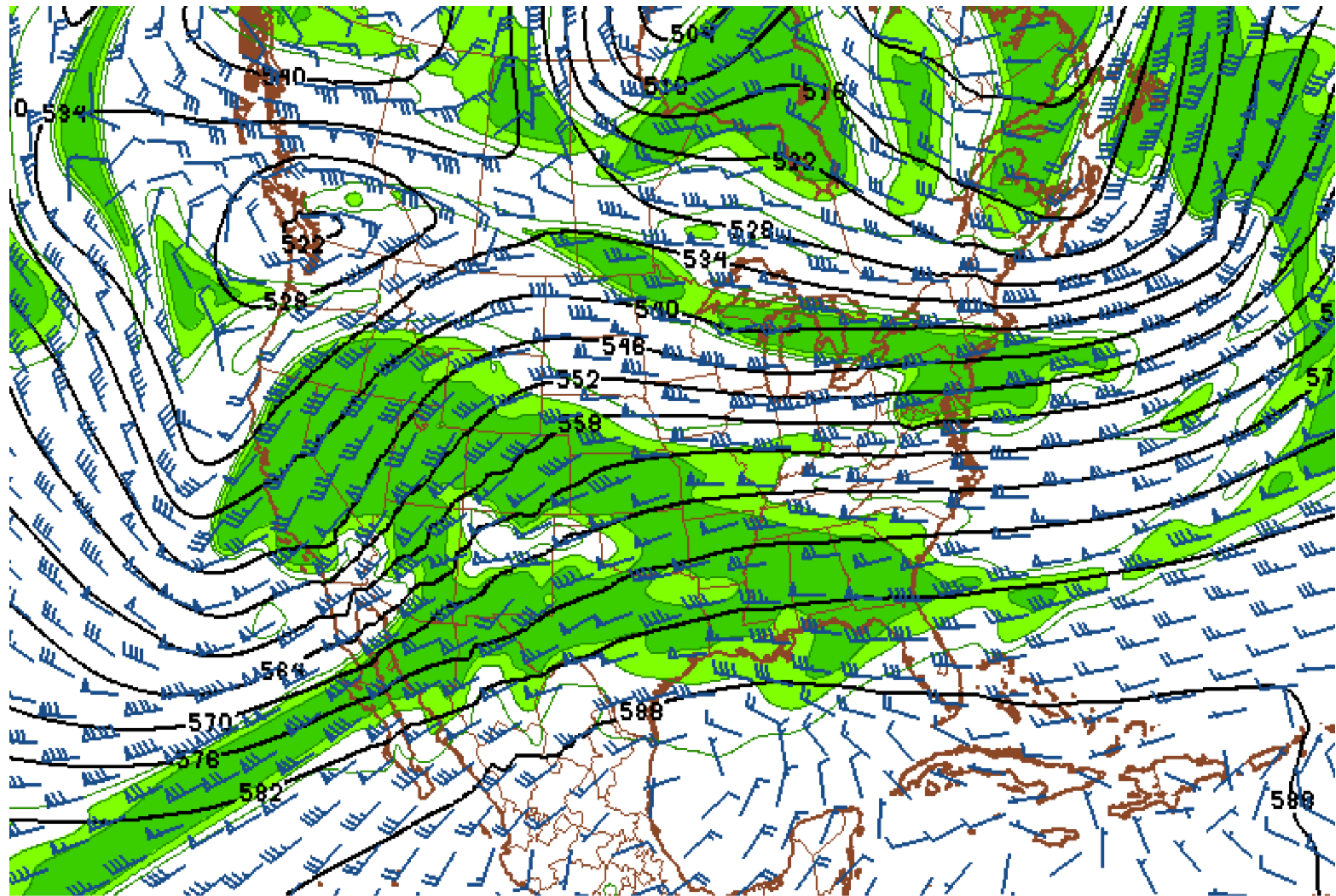
Upcoming Weather – Quick moving system impacting northern areas Feb 10-11



Potentially more potent system impacting entire area late next week Feb 15-16



Pattern remains progressive into the 3rd week of February



Upcoming Weather – Active pattern likely through at least mid month

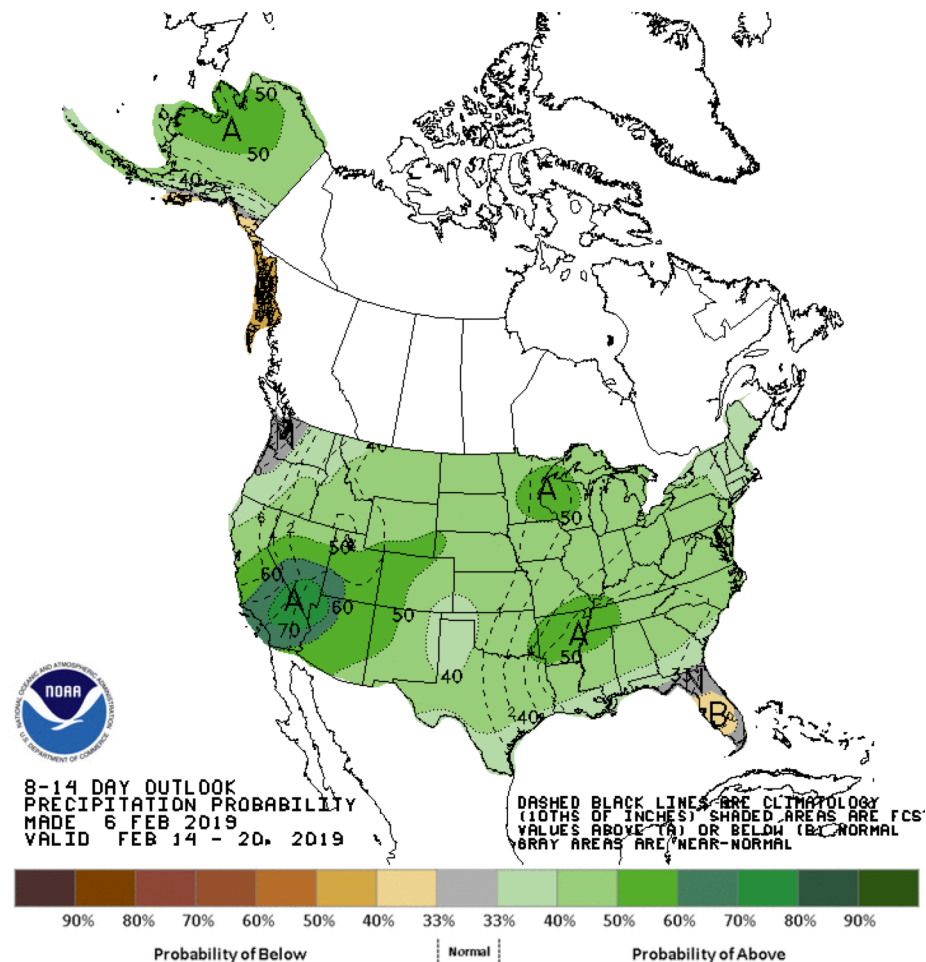
Weak storm system impacting the northern areas Feb 10-11

Potentially a more significant storm impacting the entire area late next week (Feb 15-16)

Models suggest active weather possibly beyond that (less confidence)

An increase in snowpack over most areas between now and mid/late February stands a good chance.

Above average precipitation for the month of February appears likely.



2019 Water Supply Briefing Schedule

2019 monthly water supply briefings for the Great Basin/Utah

Thursday March 7th @ 1:30 pm MT

Thursday April 4th @ 1:30 pm MT

Tuesday May 7th @ 1:30 pm MT

Colorado Basin webinars are same dates at 11:00 am MT.

Peak flow briefing early March. Additional briefings scheduled as needed.

Date/Times are subject to change. All registration information has been posted to the CBRFC web page.

CBRFC Water Supply Contacts

Please contact us with any questions

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Ashley Nielson – Green River Basin, Lake Powell Focal Point

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Cody Moser – Upper Colorado Mainstem Focal Point

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Tracy Cox and Zach Finch – Lower Colorado Basin, Virgin Focal Point

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